HW-WD408
User Manual

Ver 1.0

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1 Safety Precautions

Read the following information carefully before operating the device. Please follow the following precaution items to protect the device from risks and damage caused by fire and electric power:

- Use volume labels to mark the type of power.
- Use the power adapter that is packed within the device package.
- Pay attention to the power load of the outlet or prolonged lines. An overburden power outlet or damaged lines and plugs may cause electric shock or fire accident. Check the power cords regularly. If you find any damage, replace it at once.
- Proper space left for heat dissipation is necessary to avoid any damage caused by overheating to the device. The holes on the device are designed for heat dissipation to ensure that the device works normally. Do not cover these heat dissipation holes.
- Do not put this device close to a place where a heat source exits or high temperature occurs. Avoid the device from direct sunshine.
- Do not put this device close to a place where is over damp or watery. Do not spill any fluid on this device.
- Do not connect this device to any PC or electronic product, unless our customer engineer or your broadband provider instructs you to do this, because any wrong connection may cause any power or fire risk.
- Do not place this device on an unstable surface or support.

2 Overview

The DSL Router is a highly ADSL2+ Integrated Access Device and can support ADSL link with downstream up to 24 Mbps and upstream up to 1 Mbps. It is designed to provide a simple and cost-effective ADSL Internet connection for a private Ethernet or 802.11g/802.11b/802.11n wireless network. The Router combines high-speed ADSL Internet connection, IP routing for the LAN and wireless connectivity in one package. It is usually preferred to provide high access performance applications for the individual users, the SOHOs, and the small enterprises.

The Router is easy to install and use. The Modem connects to an Ethernet LAN or computers via standard Ethernet ports. The ADSL connection is made using ordinary telephone line with standard connectors. Multiple workstations can be networked and connected to the Internet by a single Wide Area Network (WAN) interface and single global IP address. The advanced security enhancements, packet filtering and port redirection, can help protect your network from potentially devastating intrusions by malicious agents from outside your network.

Network and Router management is done through the web-based management interface that can be accessed through the local Ethernet using any web browser. You may also enable remote management to enable configuration of the Router via the WAN interface.

2.1 Application

- Home gateway
- SOHOs
- Small enterprises
- Higher data rate broadband sharing
- PC file and application sharing
- Network and online gaming

2.2 Features

- User-friendly GUI for web configuration
- Several pre-configured popular games. Just enable the game and the port settings are automatically configured.
- Compatible with all standard Internet applications
- Industry standard and interoperable DSL interface
- Simple web-based status page displays a snapshot of system configuration, and links to the configuration pages
- Downloadable flash software updates
- Support for up to 16 permanent virtual circuits (PVC)
- Support for up to 8 PPPOE sessions
- Support NAT
- WLAN with high-speed data transfer rates of up to 150 Mbps, compatible with IEEE 802.11b/g/n, 2.4GHz/5G compliant equipment
- Optimized Linux 2.6 Operating System
- IP routing and bridging
- Asynchronous transfer mode (ATM) and digital subscriber line (DSL) support
- Point-to-point protocol (PPP)
- Network/port address translation (NAT/PAT)
- Quality of service (QoS)
- Wireless LAN security: WPA, 802.1x, RADIUS client
- Virtual private network (VPN): IPSec
- Universal plug-and-play
- Management and control
  - Web-based management (WBM)
  - Command line interface (CLI)
  - TR-069 WAN management protocol
- Remote update
- System statistics and monitoring
- DSL router is targeted at the following platforms: DSL modems, wireless access points and bridge.

2.3 Standards Compatibility and Compliance

- Support application level gateway (ALG)
- ITU G.992.1 (G.dmt)
- ITU G.992.2 (G.lite)
- ITU G.994.1 (G.hs)
- ITU G.992.3 (ADSL2)
- ITU G.992.5 (ADSL2+)
- ANSI T1.413 Issue 2
- IEEE 802.3
- IEEE 802.3u
- IEEE 802.11b
- IEEE 802.11g
- IEEE 802.11n

3 Hardware Description and Hardware Installation

3.1 Hardware Description

3.1.1 Front Panel

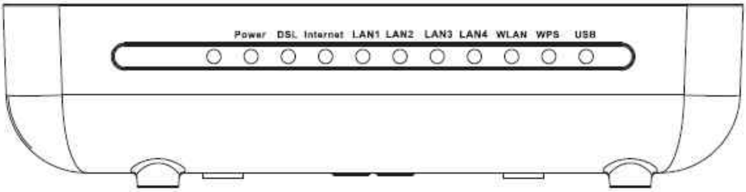


Figure 1 Front panel

The following table describes the indicators on the front panel.

Indicator	Color	Status	Description
Power	Green	On	Power is on.
	Red	On	Power is on and the device is initiating.
	Red	Blink	The firmware is upgrading.
		Off	Power is off or the device is down.
DSL	Green	On	DSL link has established.
	Green	Blink twice at every second	No DSL link is detected.
	Green	Blink four times at every second	DSL link is detected.
	-	Off	Device is powered off.
Internet	Green	On	PPP/DHCP takes effect.
	Green	Blink	PPP/DHCP is negotiating.
	Green	Blink quickly	Data is being transmitted.
	Red	On	Authentication fails.

Indicator	Color	Status	Description
LAN 1/2/3/4	Green	On	The Ethernet interface is connected.
	Green	Blink	Data is being transmitted through the Ethernet interface.
	-	Off	The Ethernet interface is disconnected.
WLAN	Green	On	WLAN is enabled.
	Green	Blink	Data is being transmitted through the wireless interface.
	-	Off	WLAN is disabled.
WPS	Green	On	Connection succeeds under Wi-Fi Protected Setup.
	Green	Blink	Negotiation is in progress under Wi-Fi Protected Setup.
	-	Off	Wi-Fi Protected Setup is disabled.
USB	Green	On	USB device is connected.
	Green	Blink	Data is being transmitted.
	-	Off	USB device is disconnected.

3.1.2 Rear Panel

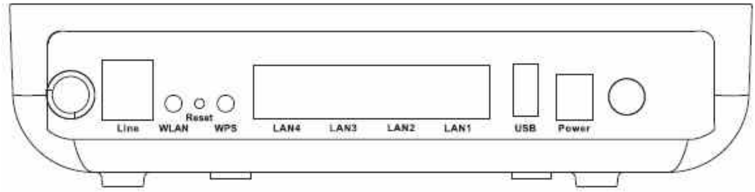


Figure 2 Rear panel

The following table describes the interfaces or the buttons on the rear panel.

Interface	Description
Line	RJ-11 port, for connecting the ADSL cable.
WLAN	WLAN switch, for enabling or disabling the WALN function.

Interface	Description
Reset	Press the button for at least 1 second and then release it. System restores the factory default settings.
WPS	This button is used for enabling WPS PBC mode. If WPS is enabled, press this button, and then the wireless router starts to accept the negotiation of PBC mode.
LAN 4~1	RJ-45 port, for connecting the router to a PC or another network device.
USB	USB port, for connecting the storage devices.
Power	Power interface, for connecting the power adapter.
○	Power switch

⚠ **Warning:**

*Do not press the **Reset** button unless you want to clear the current settings. The **Reset** button is in a small circular hole on the rear panel. If you want to restore the default settings, please press the **Reset** button gently for 1 second with a fine needle inserted into the hole and then release the button. The system reboots and returns to the factory defaults.*

The power specification is 12V, 1.25A. If the power adapter does not match the specification, it may damage the device.

3.2 Hardware Installation

3.2.1 Choosing the Best Location for Wireless Operation

Many environmental factors may affect the effective wireless function of the DSL Router. If this is the first time that you set up a wireless network device, read the following information:

The access point can be placed on a shelf or desktop, ideally you should be able to see the LED indicators in the front, as you may need to view them for troubleshooting Designed to go up to 100 meters indoors and up to 300 meters outdoors, wir LAN lets you access your network from anywhere you want. However, the numb walls, ceilings, or other objects that the wireless signals must pass through limit signal range. Typical ranges vary depending on types of materials and background RF noise in your home or business.

3.2.2 Connecting the Device

Please follow the steps below to connect the device.

Step1 Connect the **Line** port of the DSL router with a telephone cable.

Step2 Connect the LAN port of the DSL router to the network card of the PC via an Ethernet cable.

Step3 Plug one end of the power adapter to the wall outlet and connect the other end to the Power port of the DSL Router.

The followig figure displays the connection of the DSL router, PC, and telephones.

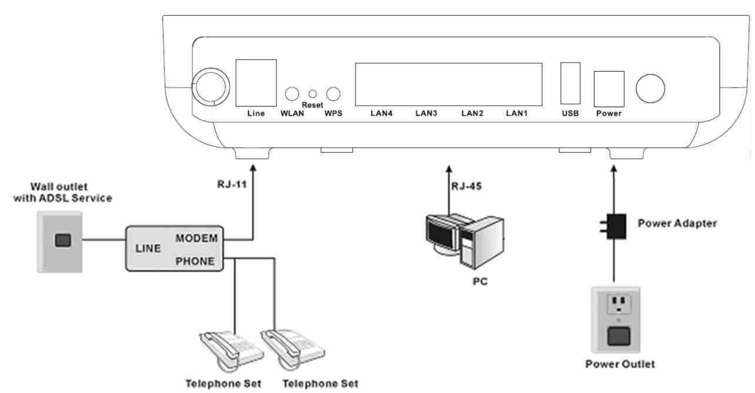


Figure 3 Connecting the DSL router

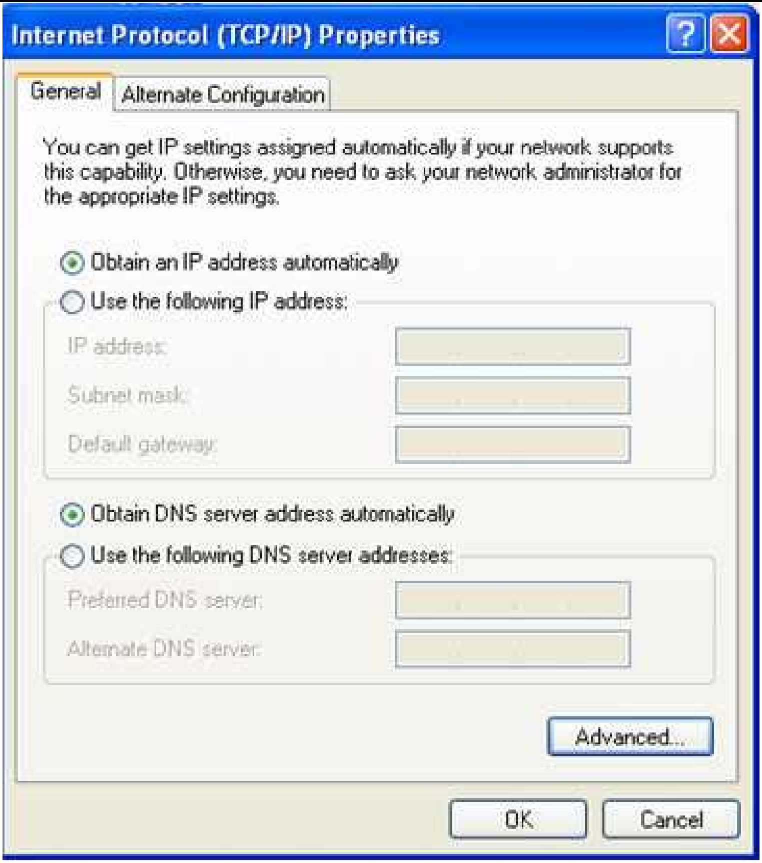
4 PC Network Configuration and Login

4.1 PC Network Configuration

Each network interface on the PC should either be configured with a statically defined IP address and DNS address, or be instructed to automatically obtain an IP address using the network DHCP server. DSL router provides a DHCP server on its LAN and it is recommended to configure your LAN to automatically obtain its IP address and DNS server IP address.

The configuration principle is identical but should be carried out differently on each operating system.

The following displays the **TCP/IP Properties** dialog box on Windows XP.



You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.

● Obtain an IP address automatically

○ Use the following IP address:

IP address:

Subnet mask:

Default gateway:

● Obtain DNS server address automatically

○ Use the following DNS server addresses:

Preferred DNS server:

Alternate DNS server:

Figure 4 IP and DNS configuration

TCP/IP configuration steps for Windows XP are as follows:

Step1 Choose **Start** > **Control Panel** > **Network Connections**.

Step2 Right-click the Ethernet connection icon and choose **Properties**.

Step3 On the **General** tab, select the **Internet Protocol (TCP/IP)** component and click **Properties**.

Step4 The **Internet Protocol (TCP/IP) Properties** window appears.

Step5 Select the **Obtain an IP address automatically** radio button.

Step6 Select the **Obtain DNS server address automatically** radio button.

Step7 Click **OK** to save the settings.

4.2 Logging In to the DSL Router

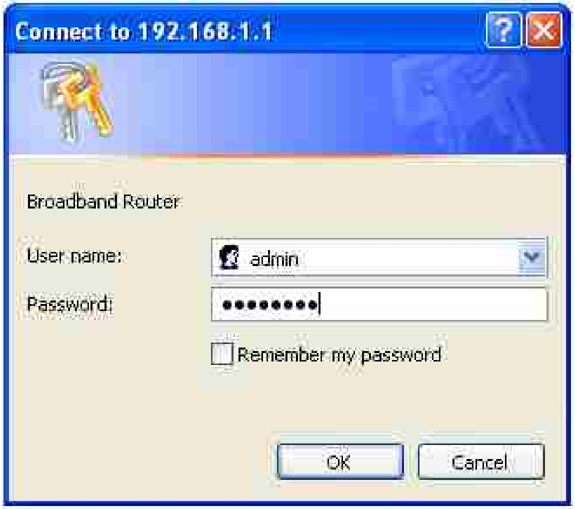
To log in to the DSL router, do as follows:

Step1 Open a Web browser on your computer.

Step2 Enter ***http://192.168.1.1*** (the default IP address of the DSL router) in the address bar. The login page appears.

Step3 Enter the user name and the password. The default username and password of the super user are **admin** and **admin**. The username and password of the common user are **user** and **user**. You need not enter the username and the password again if you select the option **Remember my password**. It is recommended to change these default values after logging in to the DSL router for the first time.

Step4 Click **OK** to log in to the Web page. Otherwise, please click **Cancel** to exit the login page.



Connect to 192.168.1.1

Broadband Router

User name: admin

Password: ●●●●●●●●●

□ Remember my password

Figure 5 Login page

After logging in to the DSL router as a super user, you can query, configure, and modify all the settings, and diagnose the system.

5 Web-Based Management

This chapter describes how to use Web-based management of the DSL router, which allows you to configure and control all of DSL router features and system parameters in a user-friendly GUI.

5.1 Device Information

Choose **Device Info**, and the submenus of **Device Info** are shown as below:

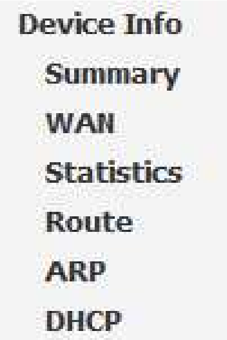
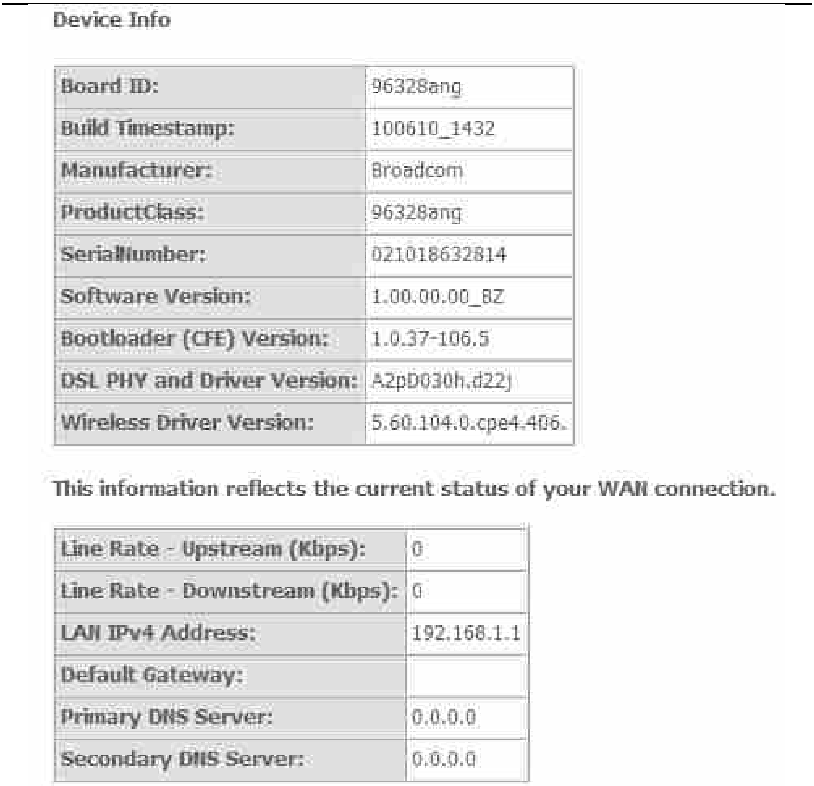


Figure 6 Submenus of device info

5.1.1 Summary

Choose **Device Info > Summary**, and the following page appears.



Device Info

Board ID:	96328ang
Build Timestamp:	100610_1432
Manufacturer:	Broadcom
ProductClass:	96328ang
SerialNumber:	021018632814
Software Version:	1.00.00.00_BZ
Bootloader (CFE) Version:	1.0.37-106.5
DSL PHY and Driver Version:	A2pD030h.d22j
Wireless Driver Version:	5.60.104.0.cpe4.406.

This information reflects the current status of your WAN connection.

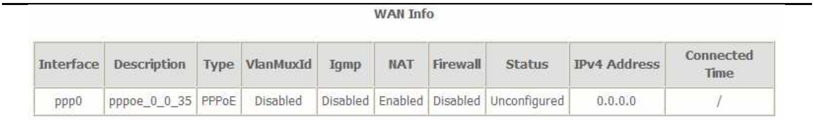
Line Rate - Upstream (Kbps):	0
Line Rate - Downstream (Kbps):	0
LAN IPv4 Address:	192.168.1.1
Default Gateway:	
Primary DNS Server:	0.0.0.0
Secondary DNS Server:	0.0.0.0

Figure 7 Summary page

This page displays the device information such as the board ID, software version, and the information of your WAN connection such as the upstream rate and the LAN IPv4 address.

5.1.2 WAN

Choose **Device Info > WAN** and the following page appears.



WAN Info

Interface	Description	Type	VlanMuxId	Igmp	NAT	Firewall	Status	IPv4 Address	Connected Time
ppp0	pppoe_0_0_35	PPPoE	Disabled	Disabled	Enabled	Disabled	Unconfigured	0.0.0.0	/

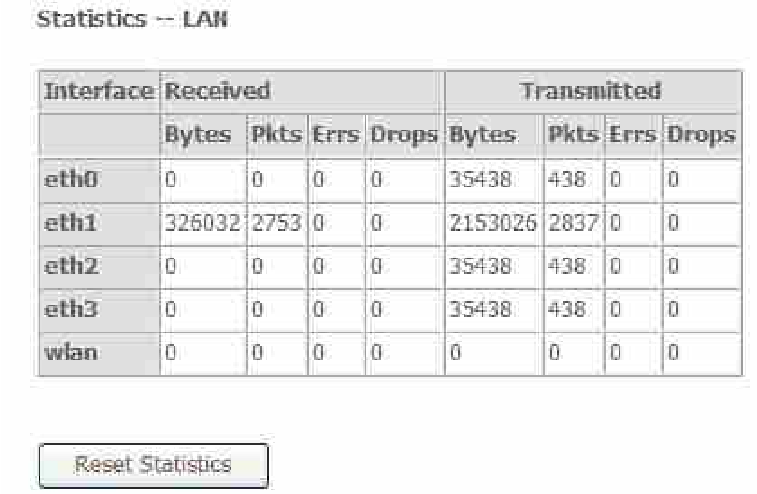
Figure 8 WAN information

This page displays the information of the WAN interface, such as the connection status, IPv4 address, and connected time.

5.1.3 Statistics

5.1.4 LAN

Choose **Device Info > Statistics > LAN** and the following page appears.



Statistics -- LAN

Interface	Received				Transmitted			
	Bytes	Pkts	Errs	Drops	Bytes	Pkts	Errs	Drops
eth0	0	0	0	0	35438	438	0	0
eth1	326032	2753	0	0	2153026	2837	0	0
eth2	0	0	0	0	35438	438	0	0
eth3	0	0	0	0	35438	438	0	0
wlan	0	0	0	0	0	0	0	0

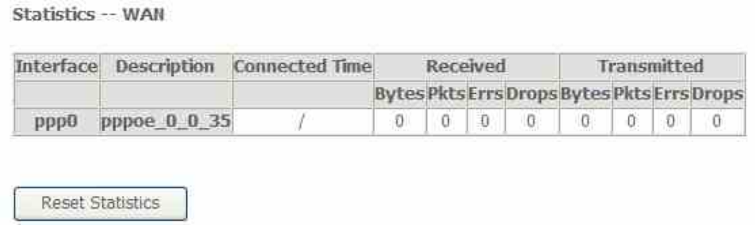
Figure 9 LAN statistical information

In this page, you can view the statistical information about the recevied and transmitted data packets of the Ethernet and wireless interfaces.

Click **Reset Statistics** to restore the values to zero and recount them.

5.1.5 WAN Service

Choose **Device Info > Statistics > WAN Service** and the following page appears.



Statistics -- WAN

Interface	Description	Connected Time	Received				Transmitted			
			Bytes	Pkts	Errs	Drops	Bytes	Pkts	Errs	Drops
ppp0	pppoe_0_0_35	/	0	0	0	0	0	0	0	0

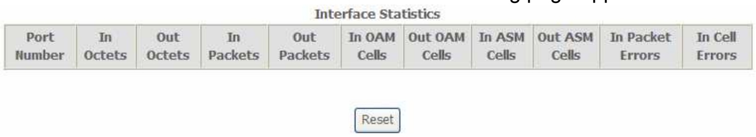
Figure 10 Statistical information of WAN service

In this page, you can view the statistical information about the recevied and transmitted data packets of the WAN interface.

Click **Reset Statistics** to restore the values to zero and recount them.

5.1.6 xTM

Choose **Device Info > Statistics > xTM** and the following page appears.



Interface Statistics

Port Number	In Octets	Out Octets	In Packets	Out Packets	In OAM Cells	Out OAM Cells	In ASM Cells	Out ASM Cells	In Packet Errors	In Cell Errors

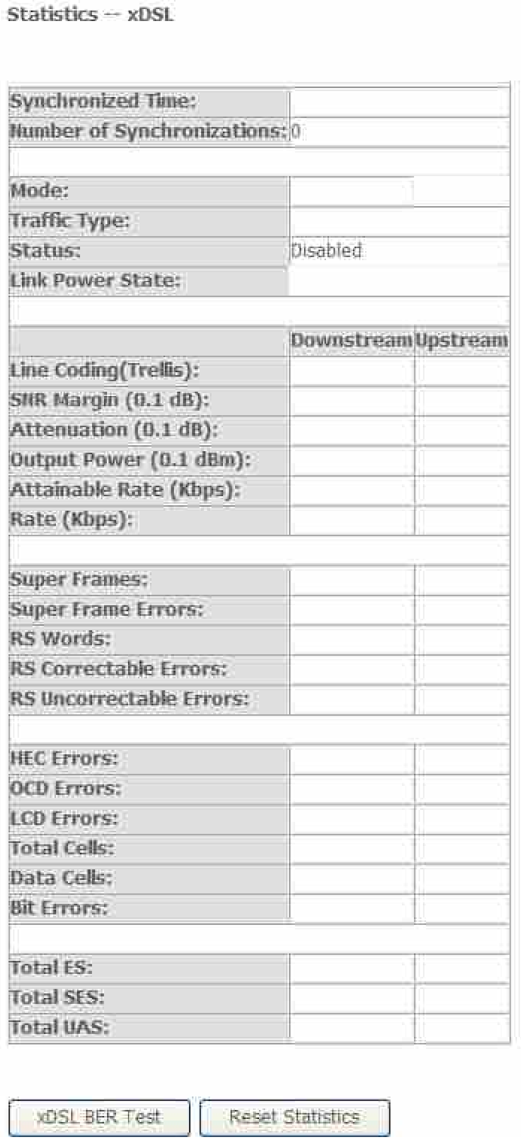
Figure 11 xTM statistical information

In this page, you can view the statistical information about the recevied and transmitted data packets at the xTM interfaces.

Click the **Reset** button to restore the values to zero and recount them.

5.1.7 xDSL

Choose **Device Info > Statistics** > **xDSL** and the following page appears.



Statistics -- xDSL

Synchronized Time:		
Number of Synchronizations:	0	
Mode:		
Traffic Type:		
Status:	Disabled	
Link Power State:		
	Downstream	Upstream
Line Coding(Trellis):		
SNR Margin (0.1 dB):		
Attenuation (0.1 dB):		
Output Power (0.1 dBm):		
Attainable Rate (Kbps):		
Rate (Kbps):		
Super Frames:		
Super Frame Errors:		
RS Words:		
RS Correctable Errors:		
RS Uncorrectable Errors:		
HEC Errors:		
OCD Errors:		
LCD Errors:		
Total Cells:		
Data Cells:		
Bit Errors:		
Total ES:		
Total SES:		
Total UAS:		

Figure 12 xDSL statistical information

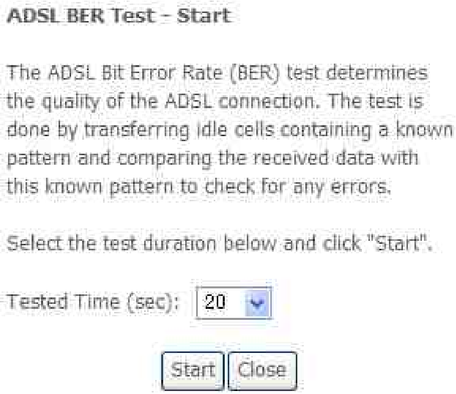
In this page, you can view the statistical information about the recevied and transmitted data packets of the xDSL interfaces.

Click **xDSL BER Test** to test the xDSL Bit Error Rate.

Click **Reset Statistics** to restore the values to zero and recount them.

xDSL BER Test

Click **xDSL BER Test** to perform a bit error rate (BER) test on the DSL line. The test page is as follows:



ADSL BER Test - Start

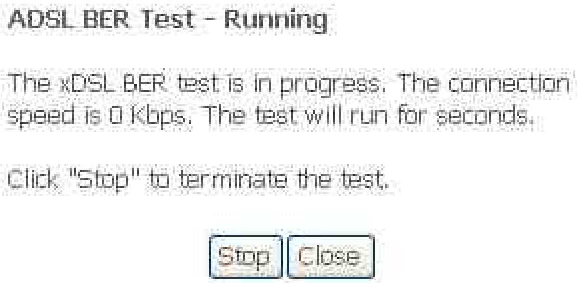
The ADSL Bit Error Rate (BER) test determines the quality of the ADSL connection. The test is done by transferring idle cells containing a known pattern and comparing the received data with this known pattern to check for any errors.

Select the test duration below and click "Start".

Tested Time (sec): 20

Figure 13 ADSL BER test

The **Tested Time (sec)** can be 1, 5, 10, 20, 60, 120, 180, 240, 300, or 360. Select a time in the drop-down list and click **Start**. The following pages appear.



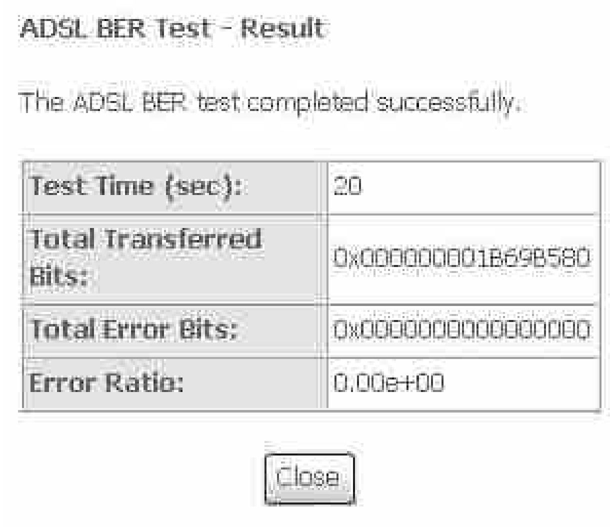
ADSL BER Test - Running

The xDSL BER test is in progress. The connection speed is 0 Kbps. The test will run for seconds.

Click "Stop" to terminate the test.

Figure 14 ADSL BER test – running

When the ADSL BER test completes, the following page appears.



ADSL BER Test - Result

The ADSL BER test completed successfully.

Test Time (sec):	20
Total Transferred Bits:	0x000000001B69B580
Total Error Bits:	0x0000000000000000
Error Ratio:	0.00e+00

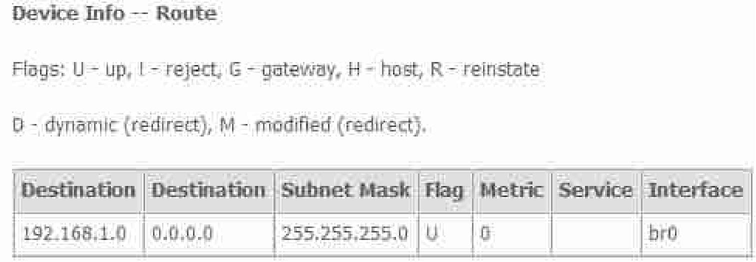
Figure 15 ADSL BER test result

Note:

If the BER reaches e-5, you cannot access the Internet.

5.1.8 Route

Choose **Device Info > Route** and the following page appears.



Device Info -- Route

Flags: U - up, ! - reject, G - gateway, H - host, R - reinstate

D - dynamic (redirect), M - modified (redirect).

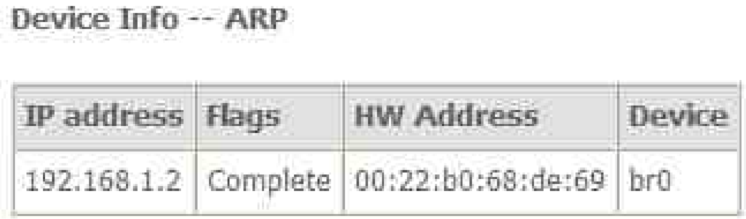
Destination	Destination	Subnet Mask	Flag	Metric	Service	Interface
192.168.1.0	0.0.0.0	255.255.255.0	U	0		br0

Figure 16 Route table

In this page, you can view the route table information.

5.1.9 ARP

Choose **Device Info > ARP** and the following page appears.



Device Info -- ARP

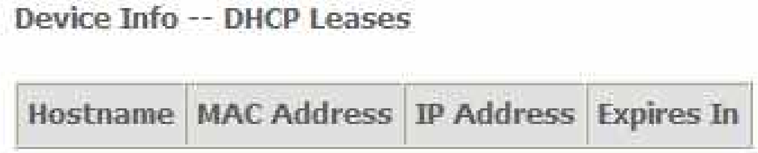
IP address	Flags	HW Address	Device
192.168.1.2	Complete	00:22:b0:68:de:69	br0

Figure 17 ARP table

In this page, you can view the MAC address and IP address information of the device connected to the router.

5.1.10 DHCP

Choose **Device Info > DHCP** and the following page appears.



Device Info -- DHCP Leases

Hostname	MAC Address	IP Address	Expires In

Figure 18 DHCP list

In this page, you can view the host name, the IP address assigned by the DHCP server, the MAC address this is corresponding to the IP address, and the DHCP lease time.

5.2 Advanced Setup

Choose **Advanced Setup** and the submenus of **Advanced Setup** are shown as below:

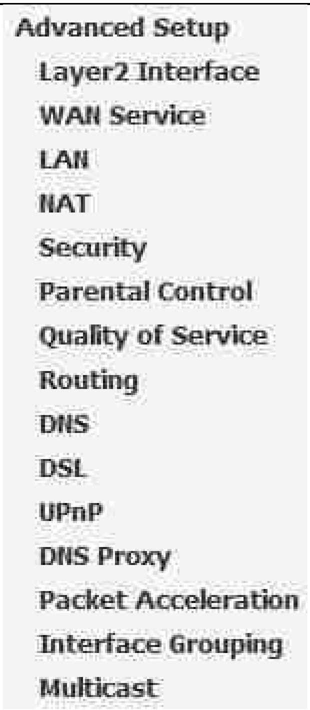
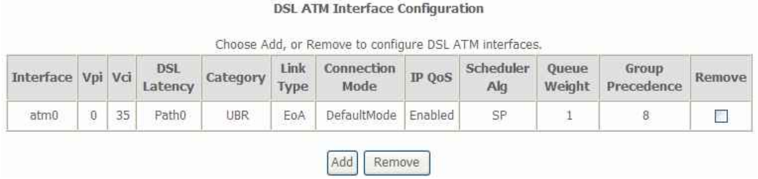


Figure 19 Submenus of advance setup

5.2.1 Layer2 Interface

ATM Interface

Choose **Advanced Setup** > **Layer2 Interface > ATM Interface** , and the following page appears.



DSL ATM Interface Configuration

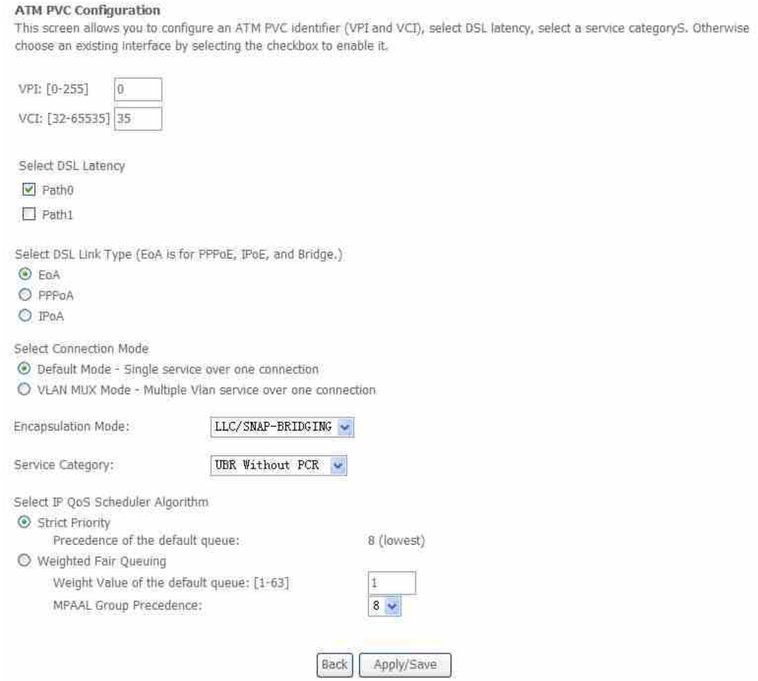
Choose Add, or Remove to configure DSL ATM interfaces.

Interface	Vpi	Vci	DSL Latency	Category	Link Type	Connection Mode	IP QoS	Scheduler Alg	Queue Weight	Group Precedence	Remove
atm0	0	35	Path0	UBR	EoA	DefaultMode	Enabled	SP	1	8	□

Figure 20 DSL ATM interface configuration

In this page, you can add or remove the DSL ATM Interfaces.

Click the **Add** button to display the following page.



ATM PVC Configuration

This screen allows you to configure an ATM PVC identifier (VPI and VCI), select DSL latency, select a service categoryS. Otherwise choose an existing interface by selecting the checkbox to enable it.

VPI: [0-255] 0

VCI: [32-65535] 35

Select DSL Latency

☑ Path0

□ Path1

Select DSL Link Type (EoA is for PPPoE, IPoE, and Bridge.)

● EoA

○ PPPoA

○ IPoA

Select Connection Mode

● Default Mode - Single service over one connection

○ VLAN MUX Mode - Multiple Vlan service over one connection

Encapsulation Mode: LLC/SNAP-BRIDGING

Service Category: UBR Without PCR

Select IP QoS Scheduler Algorithm

● Strict Priority

Precedence of the default queue: 8 (lowest)

○ Weighted Fair Queuing

Weight Value of the default queue: [1-63] 1

MPAAL Group Precedence: 8

Figure 21 ATM PVC configuration

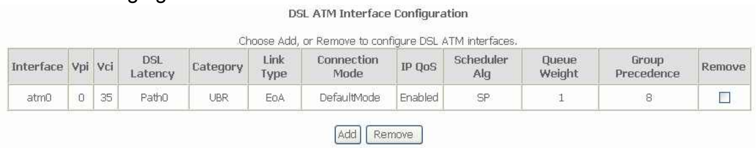
In this page, you can set the VPI and VCI values, and select the DSL latency, link type (EoA is for PPPoE, IPoE, and Bridge.), connection mode, encapsulation mode, service category, and IP QoS scheduler algorithm.

- **VPI (Virtual Path Identifier)**: The virtual path between two points in an ATM network, and its valid value is from 0 to 255.
- **VCI (Virtual Channel Identifier)**: The virtual channel between two points in an ATM network, ranging from 32 to 65535 (1 to 31 are reserved for known protocols).
- **Select DSL Latency**: You may select **Path0** and **Path1**.
- **Select DSL Link Type**: You may select **EoA** (it is for PPPoE, IPoE, and Bridge), **PPPoA**, or **IPoA**.
- **Select Connection Mode:** You may select the **Default Mode** or the **VLAN MUX Mode**.
- **Encapsulation Mode**: You may select **LLC/SNAP-BRIDGING** or **VC/MUX** in the drop-down list.
- **Service Category:** you may select **UBR Without PCR**, **UBR With PCR**, **CBR**, **Non Realtime VBR** or **Realtime VBR** in the drop-down lsit.
- **Select IP QoS Scheduler Algorithm:** You may select **Strict Priority** and **Weighted Fair Queuing**.

Note:

QoS cannot be set for CBR and Realtime VBR.

After finishing setting, click the **Apply/Save** button to make the settings take effect. See the following figure:



DSL ATM Interface Configuration

Choose Add, or Remove to configure DSL ATM interfaces.

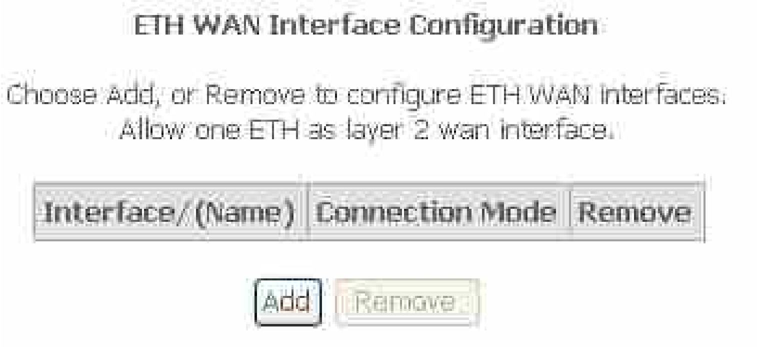
Interface	Vpi	Vci	DSL Latency	Category	Link Type	Connection Mode	IP QoS	Scheduler Alg	Queue Weight	Group Precedence	Remove
atm0	0	35	Path0	UBR	EoA	DefaultMode	Enabled	SP	1	8	□

Figure 22 Adding a DSL ATM interface

If you want to remove this Interface, please select the **Remove** check box that is corresponding to the selected interface and then click the **Remove** button.

ETH Interface

Choose **Advanced Setup > Layer2 Interface > ETH Interface** , and the following page appears.



ETH WAN Interface Configuration

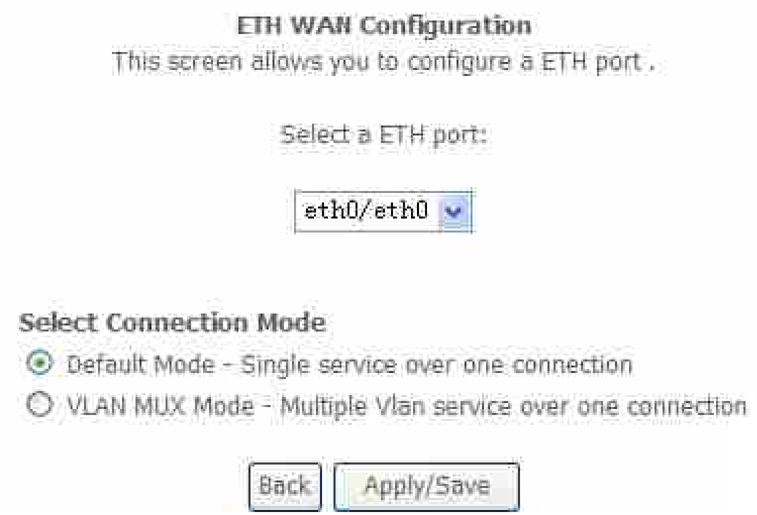
Choose Add, or Remove to configure ETH WAN interfaces.
Allow one ETH as layer 2 wan interface.

Interface/(Name)	Connection Mode	Remove

Figure 23 ETH WAN interface configuration

In this page, you can add or remove the ETH WAN interfaces.

Click the **Add** button to display the following page.



ETH WAN Configuration
This screen allows you to configure a ETH port .

Select a ETH port:

eth0/eth0

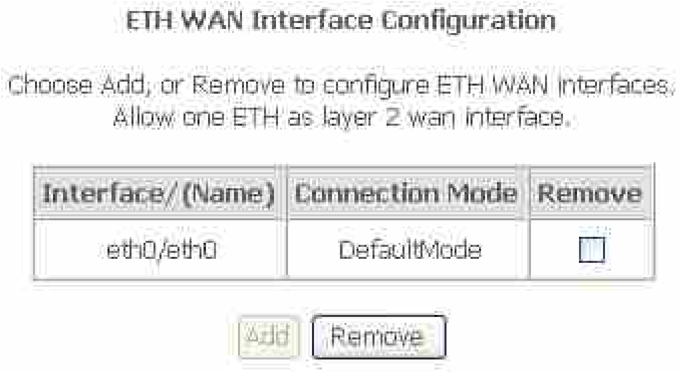
Select Connection Mode

● Default Mode - Single service over one connection

○ VLAN MUX Mode - Multiple Vlan service over one connection

Figure 24 Configuring a ETH WAN interface

In this page, select a ETH port and a proper connection mode, and then click the **Apply/Save** button to make the settings take effect. See the following figure:



ETH WAN Interface Configuration

Choose Add, or Remove to configure ETH WAN interfaces.
Allow one ETH as layer 2 wan interface.

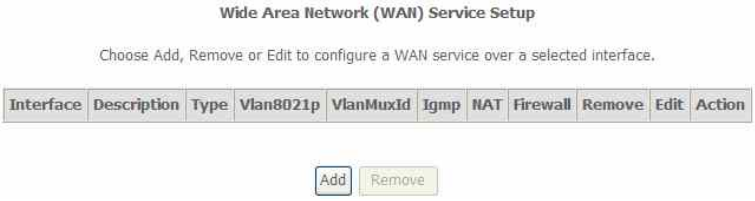
Interface/ (Name)	Connection Mode	Remove
eth0/eth0	DefaultMode	□

Figure 25 Adding a ETH WAN interface

If you want to remove this Interface, please select the **Remove** check box that is corresponding to the selected interface and then click the **Remove** button.

5.2.2 WAN Service

Choose **Advance Setup > WAN Service,** and the following page appears.



Wide Area Network (WAN) Service Setup

Choose Add, Remove or Edit to configure a WAN service over a selected interface.

Interface	Description	Type	Vlan8021p	VlanMuxId	Igmp	NAT	Firewall	Remove	Edit	Action

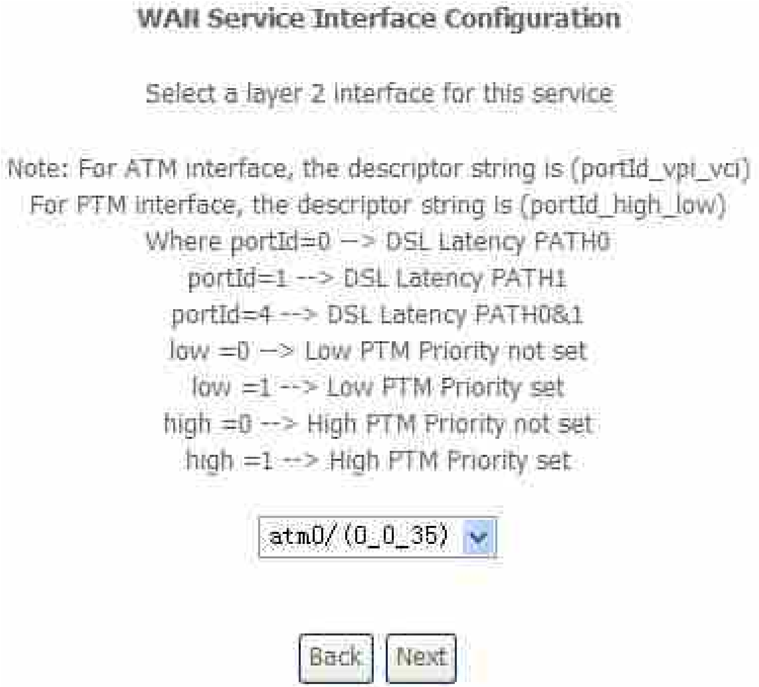
Figure 26 WAN service configuration

In this page, you are allowed to add, remove, or edit a WAN service.

Adding a PPPoE WAN Service

This section describes the steps for adding the pppoe_0_0_35 (PPPoE n service.

Step1 In the **Wide Area Network (WAN) Service Setup** page, click the **Add** button to display the following page. (At first, you must add a proper ATM configuration for this WAN service.)



WAN Service Interface Configuration

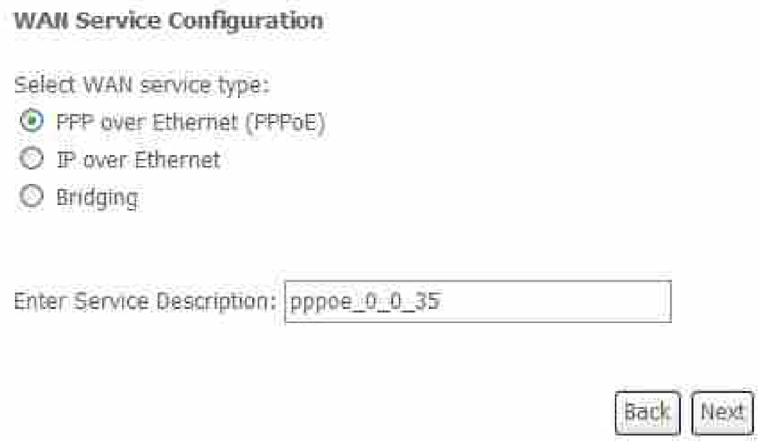
Select a layer 2 interface for this service

Note: For ATM interface, the descriptor string is (portId_vpi_vci)
For PTM interface, the descriptor string is (portId_high_low)
Where portId=0 --> DSL Latency PATH0
portId=1 --> DSL Latency PATH1
portId=4 --> DSL Latency PATH0&1
low =0 --> Low PTM Priority not set
low =1 --> Low PTM Priority set
high =0 --> High PTM Priority not set
high =1 --> High PTM Priority set

atm0/(0_0_35)

Figure 27 WAN service interface configuration (PPPoE)

Step2 In this page, you can select a ATM Interface for the WAN service. After selecting the ATM interface, click **Next** to display the following page.



WAN Service Configuration

Select WAN service type:

● PPP over Ethernet (PPPoE)

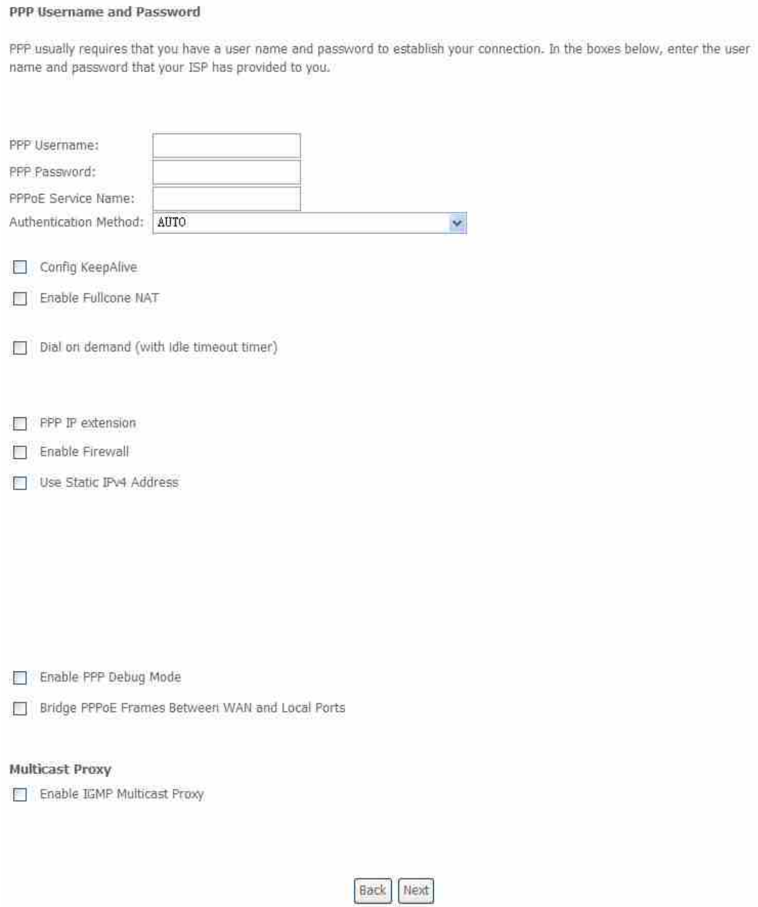
○ IP over Ethernet

○ Bridging

Enter Service Description: pppoe_0_0_35

Figure 28 WAN service configuration (PPPoE)

Step3 In this page, select the WAN service type to be **PPP over Ethernet (PPPoE)**. Click **Next** to display the following page.



PPP Username and Password

PPP usually requires that you have a user name and password to establish your connection. In the boxes below, enter the user name and password that your ISP has provided to you.

PPP Username:	
PPP Password:	
PPPoE Service Name:	
Authentication Method:	AUTO

□ Config KeepAlive

□ Enable Fullcone NAT

□ Dial on demand (with idle timeout timer)

□ PPP IP extension

□ Enable Firewall

□ Use Static IPv4 Address

□ Enable PPP Debug Mode

□ Bridge PPPoE Frames Between WAN and Local Ports

Multicast Proxy

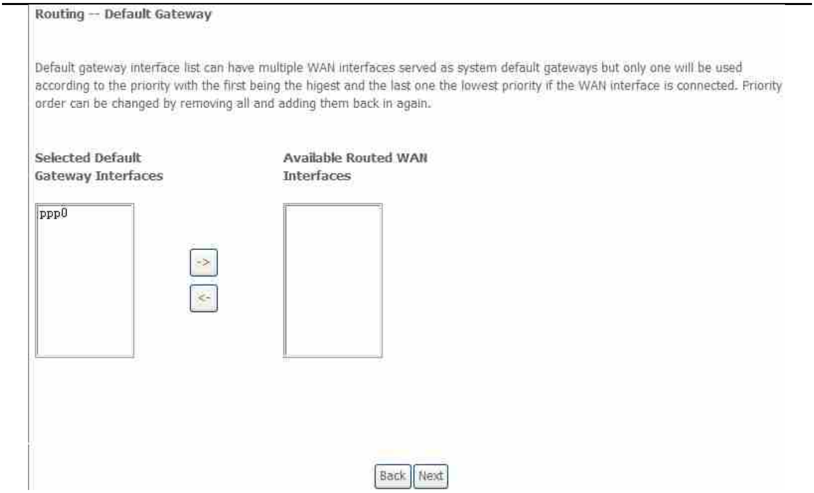
□ Enable IGMP Multicast Proxy

Figure 29 PPP username and password (PPPoE)

Step4 In this page, you can modify the PPP username, PPP password, PF service name and authentication method.

- **PPP Username:** The correct user name provided by your ISP.
- **PPP Password:** The correct password provided by your ISP.
- **PPPoE Service Name:** If your ISP provides it to you, please enter it. If not, do not enter any information.
- **Authentication Method:** The value can be AUTO, PAP, CHAP, or MSCHAP. Usually, you can select AUTO.
- **Config KeepAlive:** Whether to let the PPPoE dial-up keep alive.
- **Enable Fullcone NAT:**. NAT is one where all requests from the same internal IP address and port are mapped to the same external IP address and port. Furthermore, any external host can send a packet to the internal host, by sending a packet to the mapped external address.
- **Dial on demand (with idle timeout timer):** If this function is enabled, you need to enter the idle timeout time. Within the preset minutes, if the modem does not detect the flow of the user continuously, the modem automatically stops the PPPOE connection. Once it detects the flow (like access to a webpage), the modem restarts the PPPoE dialup. If this function is disabled, the modem performs PPPoE dial-up all the time. The PPPoE connnection does not stop, unless the modem is powered off and DSLAM or uplink equipment is abnormal.
- **PPP IP extension:** If you want to configure DMZ Host, you should enable it first.
- **Enable Firewall:**If you want WAN connection to be safer,you should enable firewall.
- **Use Static IPv4 Address:** If this function is disabled, the modem obtains an IP address assigned by an uplink equipment such as BAS, through PPPoE dial-up. If this function is enabled, the modem uses this IP address as the WAN IP address.
- **Enable PPP Debug Mode:**Enable or disable this function.
- **Bridge PPPoE Frames Between WAN and Local Ports:**Enable or disable this function.
- **Enable IGMP Multicast Proxy:**if you want PPPoE mode to support IPT enable it.

Step5 After setting the parameters, click **Next** to display the following page



Routing -- Default Gateway

Default gateway interface list can have multiple WAN interfaces served as system default gateways but only one will be used according to the priority with the first being the higest and the last one the lowest priority if the WAN interface is connected. Priority order can be changed by removing all and adding them back in again.

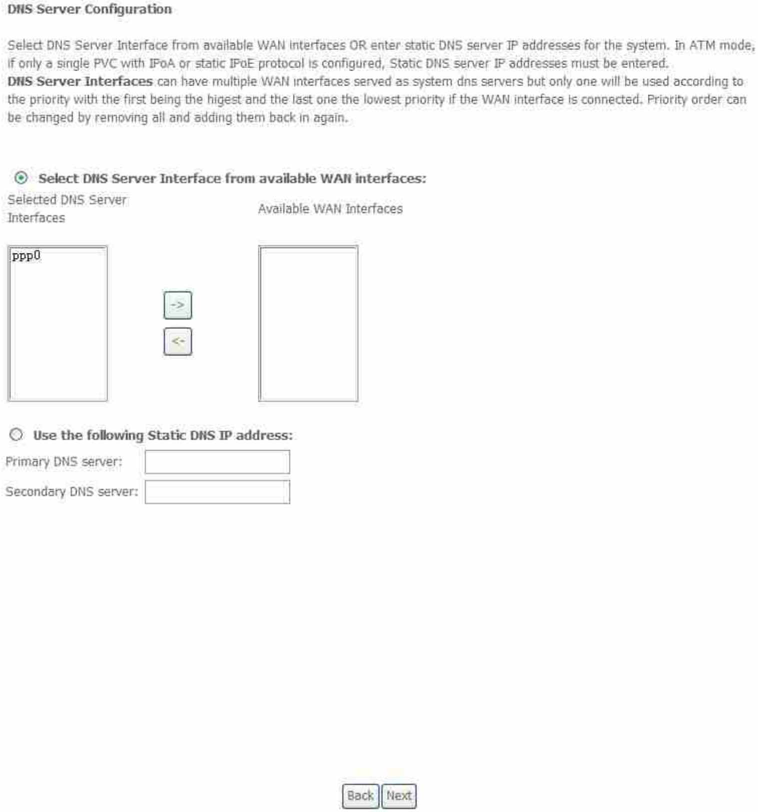
Selected Default Gateway Interfaces

ppp0

Available Routed WAN Interfaces

Figure 30 Routing-default gateway (PPPoE)

Step6 In this page, select a preferred WAN interface as the system default gateway and then click **Next** to display the following page.



DNS Server Configuration

Select DNS Server Interface from available WAN interfaces OR enter static DNS server IP addresses for the system. In ATM mode, if only a single PVC with IPoA or static IPoE protocol is configured, Static DNS server IP addresses must be entered.
DNS Server Interfaces can have multiple WAN interfaces served as system dns servers but only one will be used according to the priority with the first being the higest and the last one the lowest priority if the WAN interface is connected. Priority order can be changed by removing all and adding them back in again.

● **Select DNS Server Interface from available WAN interfaces:**

Selected DNS Server Interfaces: ppp0

Available WAN Interfaces:

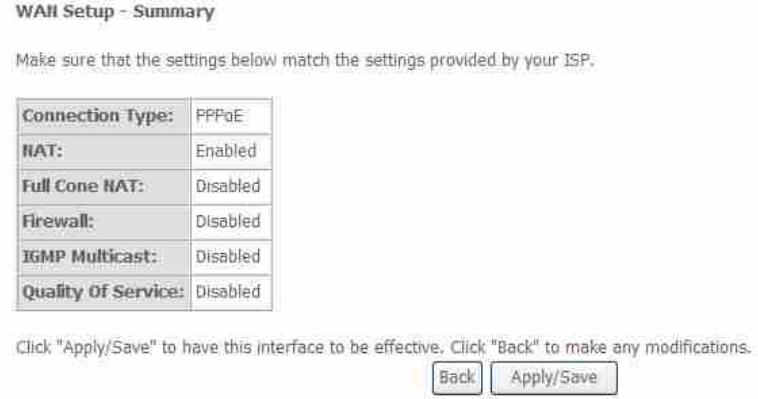
○ **Use the following Static DNS IP address:**

Primary DNS server:

Secondary DNS server:

Figure 31 DNS server configuration(PPPoE)

Step7 In this page, you may obtain the DNS server addresses from the selected WAN interface or manually enter the static DNS server addresses. If only a PVC with IPoA or static MER protocol is configured, you must manually enter the static DNS server addresses. Click **Next**, and the following page appears.



WAN Setup - Summary

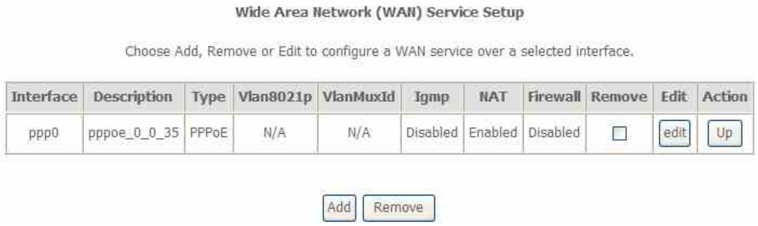
Make sure that the settings below match the settings provided by your ISP.

Connection Type:	PPPoE
NAT:	Enabled
Full Cone NAT:	Disabled
Firewall:	Disabled
IGMP Multicast:	Disabled
Quality Of Service:	Disabled

Click "Apply/Save" to have this interface to be effective. Click "Back" to make any modifications.

Figure 32 PPPoE summary

Step8 In this page, it displays the information about the PPPoE settngs. Click **Apply/Save** to save and apply the settings, and then the following page appears. You can modify the settings by clicking the **Back** button if necessary.



Wide Area Network (WAN) Service Setup

Choose Add, Remove or Edit to configure a WAN service over a selected interface.

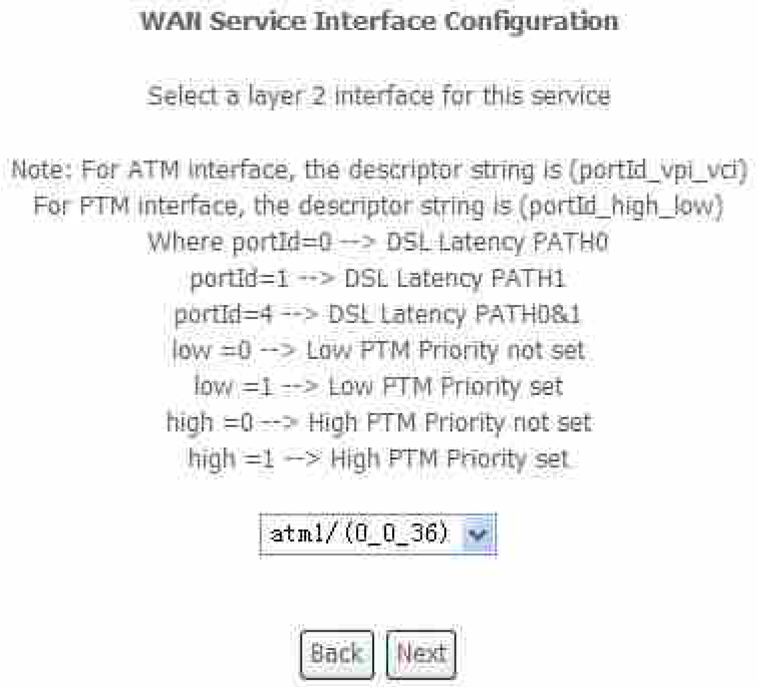
Interface	Description	Type	Vlan8021p	VlanMuxId	Igmp	NAT	Firewall	Remove	Edit	Action
ppp0	pppoe_0_0_35	PPPoE	N/A	N/A	Disabled	Enabled	Disabled	□	edit	Up

Figure 33 Completing the settings of PPPoE WAN service

Adding a MER (IPoE) WAN service

This section describes the steps for adding the ipoe_0_0_36 (MER mode) service.

Step1 In the **Wide Area Network (WAN) Service Setup** page, click the **Add** button to display the following page. (At first, you must add a ATM configuration for this WAN service.)



WAN Service Interface Configuration

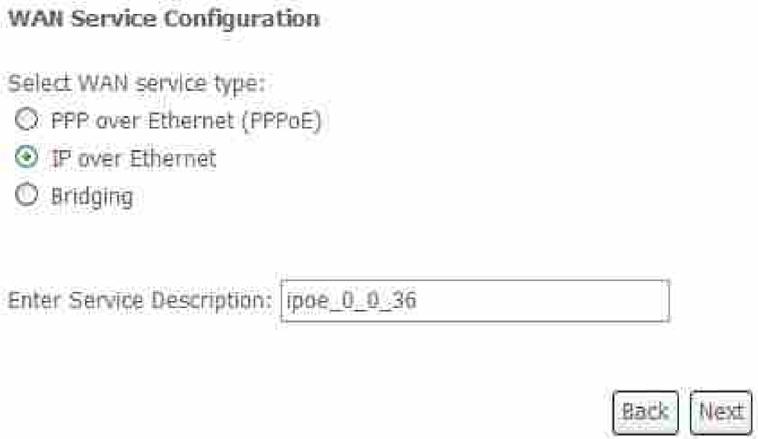
Select a layer 2 interface for this service

Note: For ATM interface, the descriptor string is (portId_vpi_vci)
For PTM interface, the descriptor string is (portId_high_low)
Where portId=0 --> DSL Latency PATH0
portId=1 --> DSL Latency PATH1
portId=4 --> DSL Latency PATH0&1
low =0 --> Low PTM Priority not set
low =1 --> Low PTM Priority set
high =0 --> High PTM Priority not set
high =1 --> High PTM Priority set

atm1/(0_0_36)

Figure 34 WAN service interface configuration (IPoE)

Step2 Select an ATM Interface, for example, atm1/(0_0_36), and then click **Next** to display the following page.



WAN Service Configuration

Select WAN service type:

○ PPP over Ethernet (PPPoE)

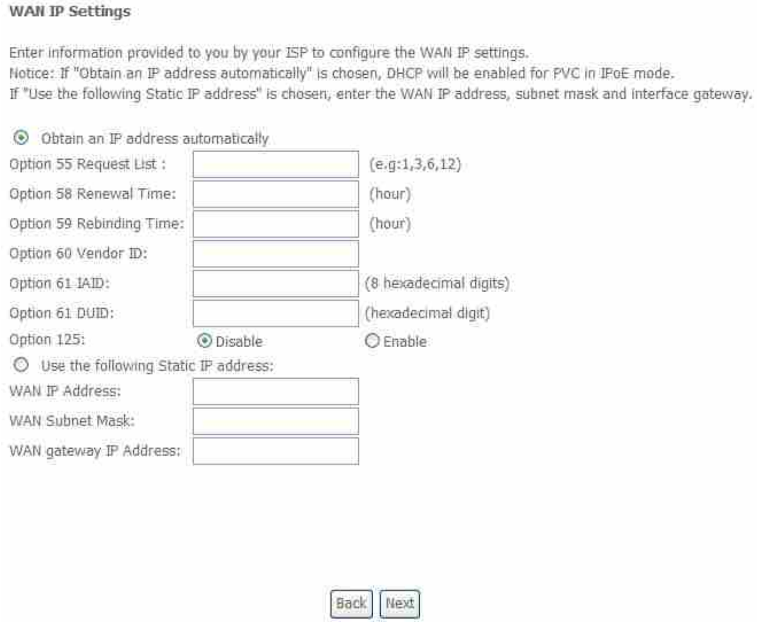
● IP over Ethernet

○ Bridging

Enter Service Description: ipoe_0_0_36

Figure 35 WAN service configuration (IPoE)

Step3 In this page, select the WAN service type to be IP over Ethernet, and r the service description. After finishing setting, click **Next** to display the following page.



WAN IP Settings

Enter information provided to you by your ISP to configure the WAN IP settings.
Notice: If "Obtain an IP address automatically" is chosen, DHCP will be enabled for PVC in IPoE mode.
If "Use the following Static IP address" is chosen, enter the WAN IP address, subnet mask and interface gateway.

● Obtain an IP address automatically

Option 55 Request List :		(e.g:1,3,6,12)
Option 58 Renewal Time:		(hour)
Option 59 Rebinding Time:		(hour)
Option 60 Vendor ID:		
Option 61 IAID:		(8 hexadecimal digits)
Option 61 DUID:		(hexadecimal digit)
Option 125:	● Disable	○ Enable

○ Use the following Static IP address:

WAN IP Address:	
WAN Subnet Mask:	
WAN gateway IP Address:	

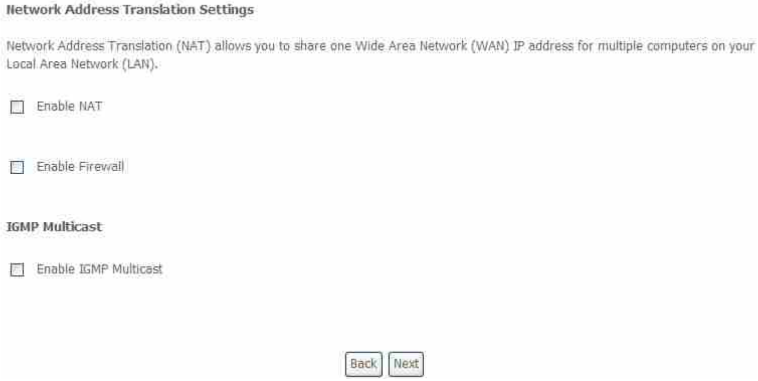
Figure 36 WAN IP settings (IPoE)

Step4 In this page, you may themodify the WAN IP settings. You may select obtain an IP address automatically or manually enter the IP address provided by your ISP. Click **Next** and the following page appears.

Note:

*If selecting **Obtain an IP address automatically**, DHCP will be enabled for PVC in MER mode.*

*If selecting **Use the following Static IP address**, please enter the WAN IP address, subnet mask and gateway IP address.*



Network Address Translation Settings

Network Address Translation (NAT) allows you to share one Wide Area Network (WAN) IP address for multiple computers on your Local Area Network (LAN).

□ Enable NAT

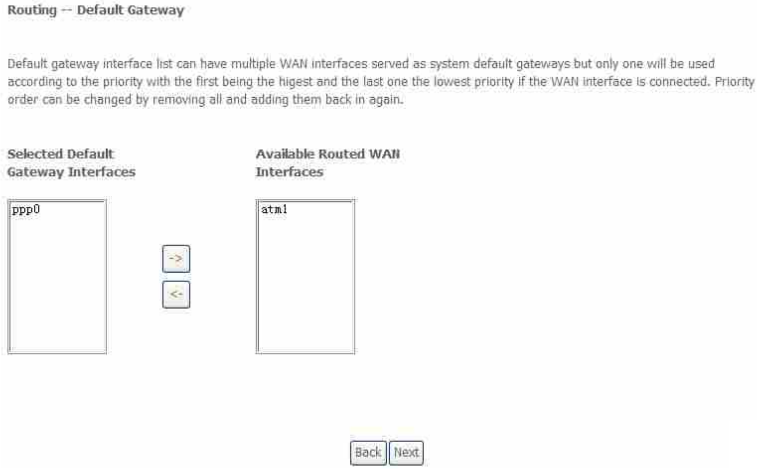
□ Enable Firewall

IGMP Multicast

□ Enable IGMP Multicast

Figure 37 Network address translation settings (IPoE)

Step5 In this page, you can set the network address translation settings,for example, enabling NAT, enabling firewall, and.enabling IGMP multicast. After finishing setting, click **Next** and the following page appears.



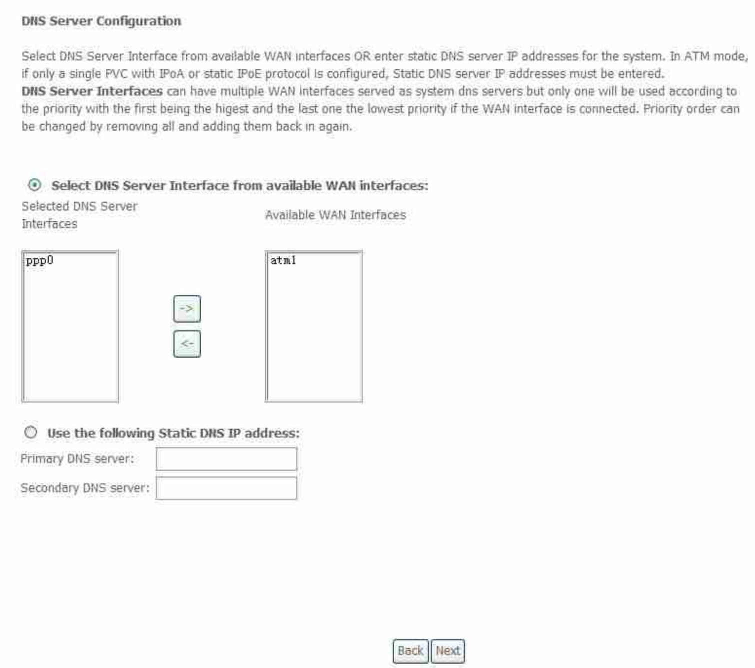
Routing -- Default Gateway

Default gateway interface list can have multiple WAN interfaces served as system default gateways but only one will be used according to the priority with the first being the higest and the last one the lowest priority if the WAN interface is connected. Priority order can be changed by removing all and adding them back in again.

Selected Default Gateway Interfaces		Available Routed WAN Interfaces
ppp0	-> <-	atm1

Figure 38 Routing-default gateway (IPoE)

Step6 In this page, select a preferred WAN interface as the system default gateway and then click **Next** to display the following page.



DNS Server Configuration

Select DNS Server Interface from available WAN interfaces OR enter static DNS server IP addresses for the system. In ATM mode, if only a single PVC with IPoA or static IPoE protocol is configured, Static DNS server IP addresses must be entered.

DNS Server Interfaces can have multiple WAN interfaces served as system dns servers but only one will be used according to the priority with the first being the higest and the last one the lowest priority if the WAN interface is connected. Priority order can be changed by removing all and adding them back in again.

● **Select DNS Server Interface from available WAN interfaces:**

Selected DNS Server Interfaces: ppp0

Available WAN Interfaces: atm1

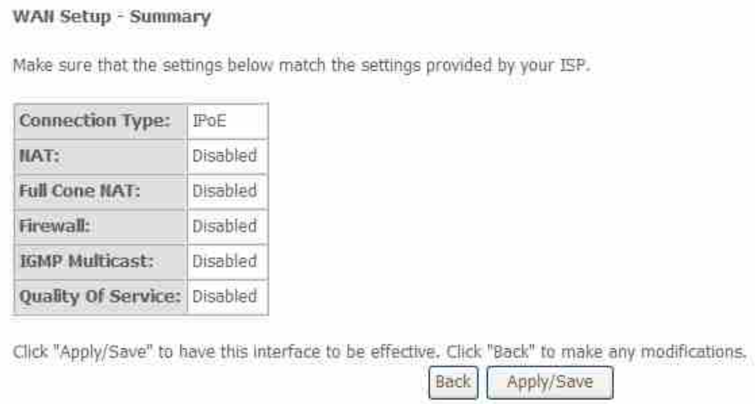
○ **Use the following Static DNS IP address:**

Primary DNS server:

Secondary DNS server:

Figure 39 DNS server configuration (IPoE)

Step7 In this page, you may obtain the DNS server addresses from the selected WAN interface or manually enter static DNS server addresses. If only a PVC with IPoA or static MER protocol is configured, you must enter the static DNS server addresses. After finishing setting, click **Next** to di the following page.



WAN Setup - Summary

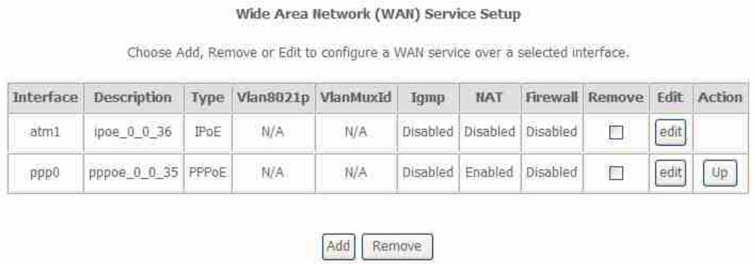
Make sure that the settings below match the settings provided by your ISP.

Connection Type:	IPoE
NAT:	Disabled
Full Cone NAT:	Disabled
Firewall:	Disabled
IGMP Multicast:	Disabled
Quality Of Service:	Disabled

Click "Apply/Save" to have this interface to be effective. Click "Back" to make any modifications.

Figure 40 IPoE summary

Step8 In this page, it displays the information about the IPoE settngs.Click **Apply/Save** to save and apply the settings, and then the following page appears. You can modify the settings by clicking the **Back** button if necessary.



Wide Area Network (WAN) Service Setup

Choose Add, Remove or Edit to configure a WAN service over a selected interface.

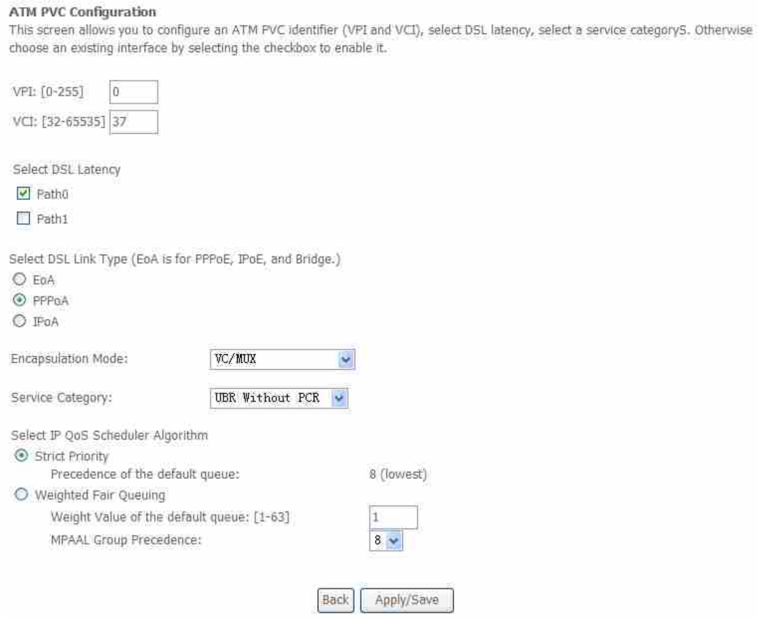
Interface	Description	Type	Vlan8021p	VlanMuxId	Igmp	NAT	Firewall	Remove	Edit	Action
atm1	ipoe_0_0_36	IPoE	N/A	N/A	Disabled	Disabled	Disabled	□	edit	
ppp0	pppoe_0_0_35	PPPoE	N/A	N/A	Disabled	Enabled	Disabled	□	edit	Up

Figure 41 Completing the settings of IPoA WAN service

Adding a PPPoA WAN service

This section describes the steps for adding the pppoa_0_0_37 (PPPoA mode) service.

Step1 Choose **Advanced Setup** > **Layer2 Interface** > **ATM Interface** to dsipaly the **DSL ATM Interface Configuration** page. In this page, you need to add a PVC for PPPoA mode. Click the **Add** button in the **DSL ATM Interface Configuration** page to display the following page.



ATM PVC Configuration

This screen allows you to configure an ATM PVC identifier (VPI and VCI), select DSL latency, select a service categoryS. Otherwise choose an existing interface by selecting the checkbox to enable it.

VPI: [0-255] 0

VCI: [32-65535] 37

Select DSL Latency

☑ Path0

□ Path1

Select DSL Link Type (EoA is for PPPoE, IPoE, and Bridge.)

○ EoA

● PPPoA

○ IPoA

Encapsulation Mode: VC/MUX

Service Category: UBR Without PCR

Select IP QoS Scheduler Algorithm

● Strict Priority

Precedence of the default queue: 8 (lowest)

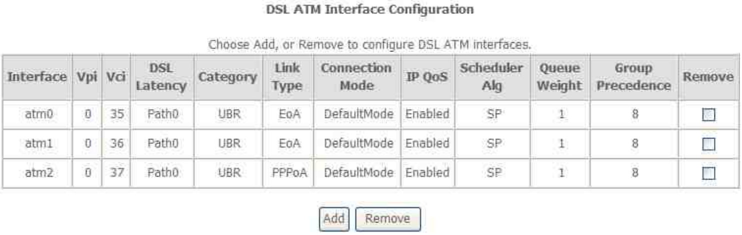
○ Weighted Fair Queuing

Weight Value of the default queue: [1-63] 1

MPAAL Group Precedence: 8

Figure 42 ATM PVC configuration (PPPoA)

Step2 Select the DSL link type to be **PPPoA**, and select the encapsulation mode to be **VC/MUX** (according to the uplink equipment). After finishing setting, click the **Apply/Save** button to apply the setings, and the following page appears.



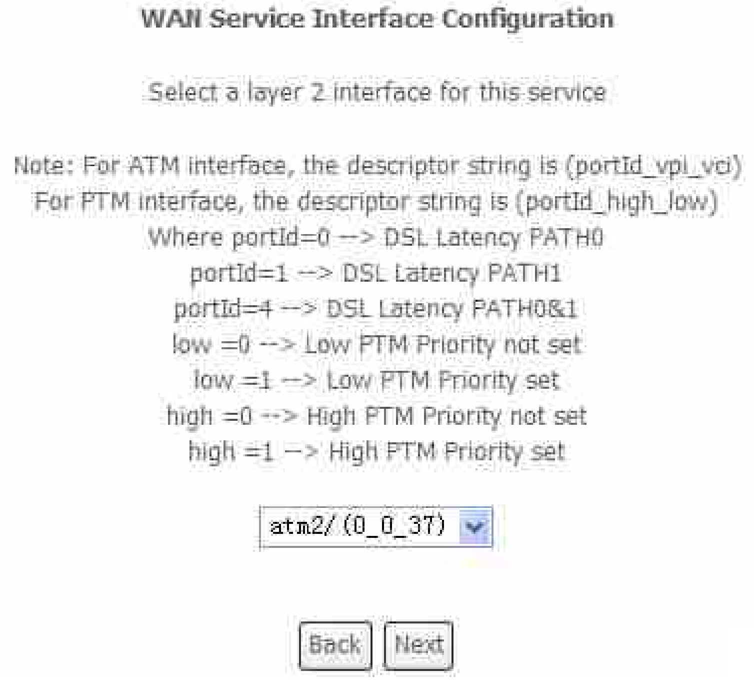
DSL ATM Interface Configuration

Choose Add, or Remove to configure DSL ATM interfaces.

Interface	Vpi	Vci	DSL Latency	Category	Link Type	Connection Mode	IP QoS	Scheduler Alg	Queue Weight	Group Precedence	Remove
atm0	0	35	Path0	UBR	EoA	DefaultMode	Enabled	SP	1	8	□
atm1	0	36	Path0	UBR	EoA	DefaultMode	Enabled	SP	1	8	□
atm2	0	37	Path0	UBR	PPPoA	DefaultMode	Enabled	SP	1	8	□

Figure 43 Adding a DSL ATM interface for PPPoA service

Step3 Choose **WAN Service** and click **Add** to display the following page.



WAN Service Interface Configuration

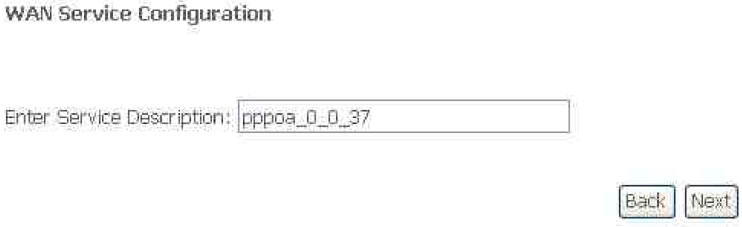
Select a layer 2 interface for this service

Note: For ATM interface, the descriptor string is (portId_vpi_vci)
For PTM interface, the descriptor string is (portId_high_low)
Where portId=0 --> DSL Latency PATH0
portId=1 --> DSL Latency PATH1
portId=4 --> DSL Latency PATH0&1
low =0 --> Low PTM Priority not set
low =1 --> Low PTM Priority set
high =0 --> High PTM Priority not set
high =1 --> High PTM Priority set

atm2/(0_0_37)

Figure 44 WAN service interface configuration (PPPoA)

Step4 Select the proper interface for the WAN service, and then click **Next** to display the following page.

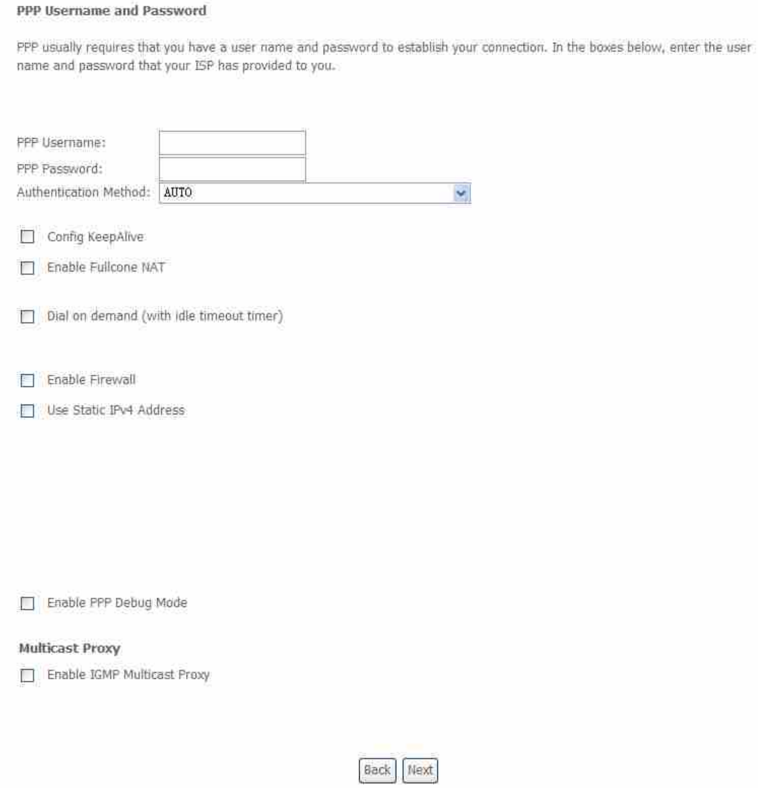


WAN Service Configuration

Enter Service Description: pppoa_0_0_37

Figure 45 WAN service configuration (PPPoA)

Step5 In this page, you may modify the service description. Click **Next** to display the following page.



PPP Username and Password

PPP usually requires that you have a user name and password to establish your connection. In the boxes below, enter the user name and password that your ISP has provided to you.

PPP Username:	
PPP Password:	
Authentication Method:	AUTO

□ Config KeepAlive

□ Enable Fullcone NAT

□ Dial on demand (with idle timeout timer)

□ Enable Firewall

□ Use Static IPv4 Address

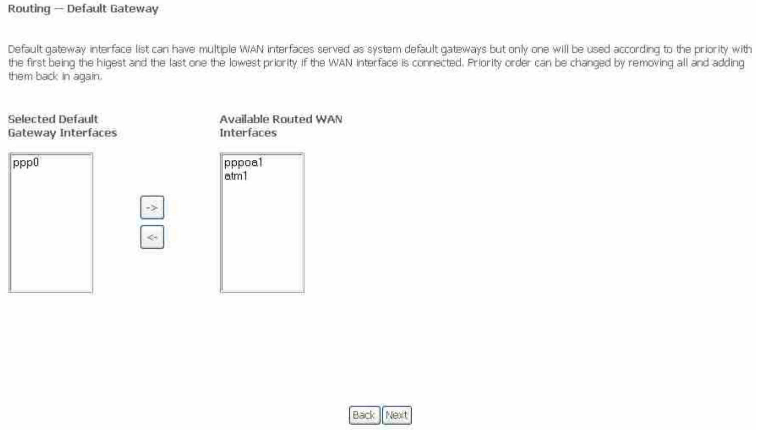
□ Enable PPP Debug Mode

Multicast Proxy

□ Enable IGMP Multicast Proxy

Figure 46 PPP username and password (PPPoA)

Step6 In this page, you can enter the PPP username and PPP password provided by your ISP. Select the authentication method according to your requirement. After finishing setting, click **Next** to display the following page.



Routing -- Default Gateway

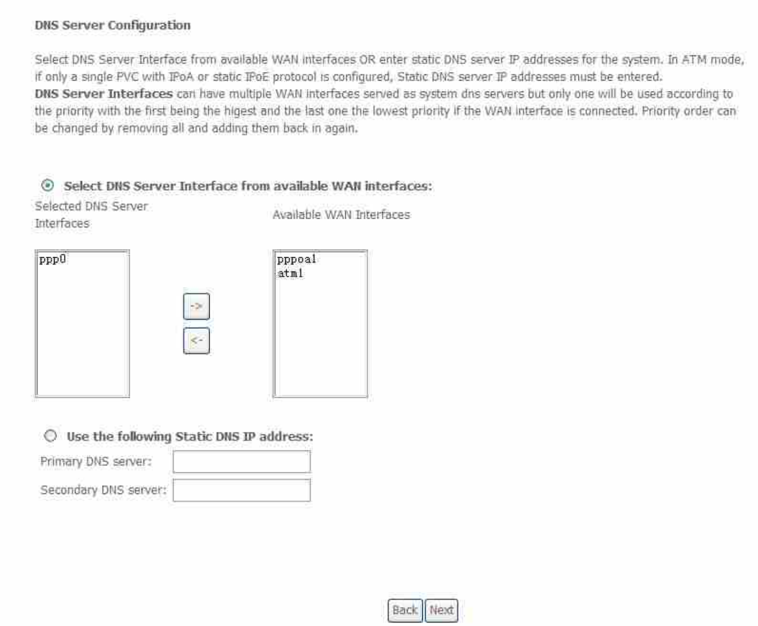
Default gateway interface list can have multiple WAN interfaces served as system default gateways but only one will be used according to the priority with the first being the higest and the last one the lowest priority if the WAN interface is connected. Priority order can be changed by removing all and adding them back in again.

Selected Default Gateway Interfaces: ppp0

Available Routed WAN Interfaces: pppoa1, atm1

Figure 47 Routing-default gateway (PPPoA)

Step7 In this page, select a preferred WAN interface as the system default gateway and then click **Next** to display the following page.



DNS Server Configuration

Select DNS Server Interface from available WAN interfaces OR enter static DNS server IP addresses for the system. In ATM mode, if only a single PVC with IPoA or static IPoE protocol is configured, Static DNS server IP addresses must be entered.
DNS Server Interfaces can have multiple WAN interfaces served as system dns servers but only one will be used according to the priority with the first being the higest and the last one the lowest priority if the WAN interface is connected. Priority order can be changed by removing all and adding them back in again.

● **Select DNS Server Interface from available WAN interfaces:**

Selected DNS Server Interfaces: ppp0

Available WAN Interfaces: pppoa1, atm1

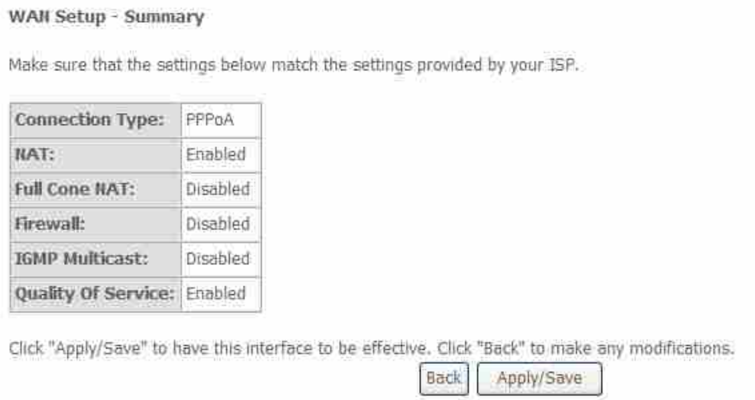
○ **Use the following Static DNS IP address:**

Primary DNS server:

Secondary DNS server:

Figure 48 DNS server configuration (PPPoA)

Step8 In this page, you can obtain the DNS server addresses from the selected WAN interface or manually enter the static DNS server addresses. If only a PVC with IPoA or static MER protocol is configured, you must enter the static DNS server addresses. After finishing setting, click **Next** to display the following page.



WAN Setup - Summary

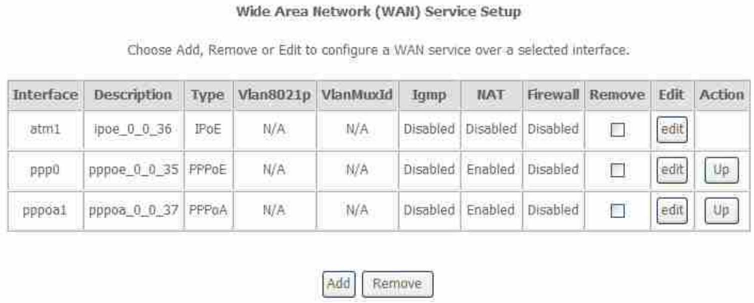
Make sure that the settings below match the settings provided by your ISP.

Connection Type:	PPPoA
NAT:	Enabled
Full Cone NAT:	Disabled
Firewall:	Disabled
IGMP Multicast:	Disabled
Quality Of Service:	Enabled

Click "Apply/Save" to have this interface to be effective. Click "Back" to make any modifications.

Figure 49 PPPoA summary

Step9 In this page, it displays the information about the PPPoA settngs.Click **Apply/Save** to apply the settings, and then the following page appears. You can modify the settings by clicking the **Back** button if necessary.



Wide Area Network (WAN) Service Setup

Choose Add, Remove or Edit to configure a WAN service over a selected interface.

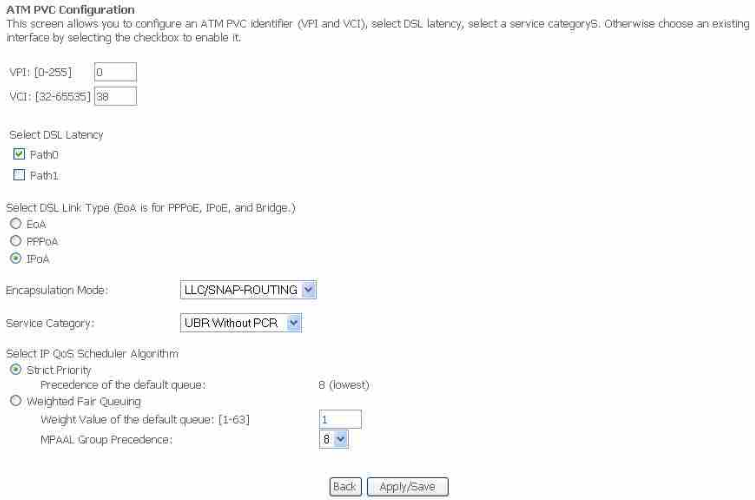
Interface	Description	Type	Vlan8021p	VlanMuxId	Igmp	NAT	Firewall	Remove	Edit	Action
atm1	ipoe_0_0_36	IPoE	N/A	N/A	Disabled	Disabled	Disabled	□	edit	
ppp0	pppoe_0_0_35	PPPoE	N/A	N/A	Disabled	Enabled	Disabled	□	edit	Up
pppoa1	pppoa_0_0_37	PPPoA	N/A	N/A	Disabled	Enabled	Disabled	□	edit	Up

Figure 50 Completing the settings of PPPoA WAN service

Adding an IPoA WAN service

This section describes the steps for adding the ipoa_0_0_38 (IPoA mode).

Step1 Choose **Advanced Setup > Layer2 Interface > ATM Interfa** dsipaly the **DSL ATM Interface Configuration** page. In this page need to add a PVC for IPoA mode. Click the **Add** button in the **DSL ATM Interface Configuration** page to display the following page.



ATM PVC Configuration

This screen allows you to configure an ATM PVC identifier (VPI and VCI), select DSL latency, select a service categoryS. Otherwise choose an existing interface by selecting the checkbox to enable it.

VPI: [0-255]	0
VCI: [32-65535]	38

Select DSL Latency

☑ Path0

☐ Path1

Select DSL Link Type (EoA is for PPPoE, IPoE, and Bridge.)

○ EoA

○ PPPoA

● IPoA

Encapsulation Mode:	LLC/SNAP-ROUTING
Service Category:	UBR Without PCR

Select IP QoS Scheduler Algorithm

● Strict Priority

Precedence of the default queue: 8 (lowest)

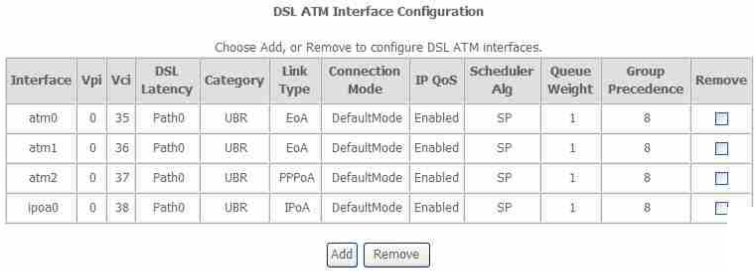
○ Weighted Fair Queuing

Weight Value of the default queue: [1-63] 1

MPAAL Group Precedence: 8

Figure 51 ATM PVC configuration (IPoA)

Step2 Select the DSL link type to be **IPoA**, and select the encapsulation mode to be **LLC/SNAP-ROUTING** (according to the uplink equipment). After finishing setting, click the **Apply/Save** button to display the following page.



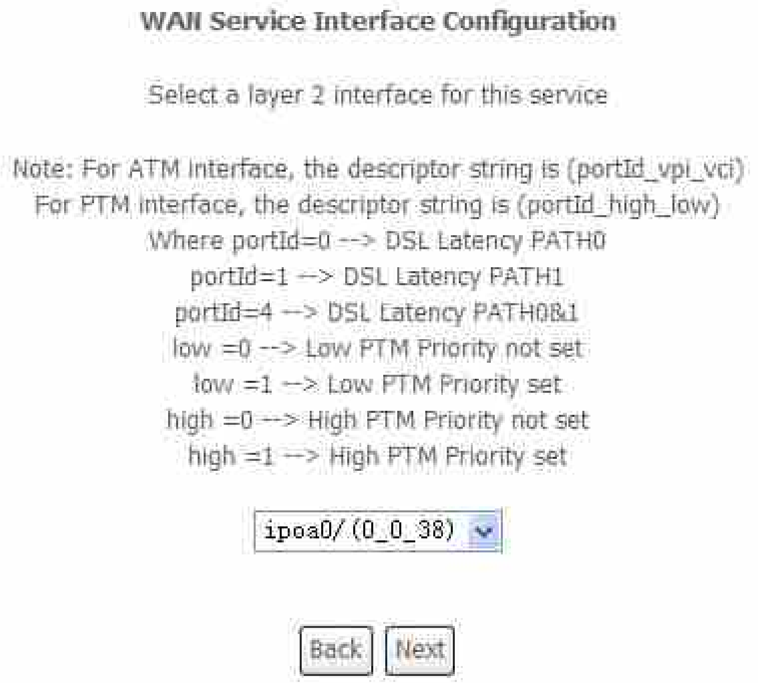
DSL ATM Interface Configuration

Choose Add, or Remove to configure DSL ATM interfaces.

Interface	Vpi	Vci	DSL Latency	Category	Link Type	Connection Mode	IP QoS	Scheduler Alg	Queue Weight	Group Precedence	Remove
atm0	0	35	Path0	UBR	EoA	DefaultMode	Enabled	SP	1	8	☐
atm1	0	36	Path0	UBR	EoA	DefaultMode	Enabled	SP	1	8	☐
atm2	0	37	Path0	UBR	PPPoA	DefaultMode	Enabled	SP	1	8	☐
ipoa0	0	38	Path0	UBR	IPoA	DefaultMode	Enabled	SP	1	8	☐

Figure 52 Adding a DSL ATM interface for IPoA service

Step3 Choose **WAN Service** and click **Add** to display the following page.



WAN Service Interface Configuration

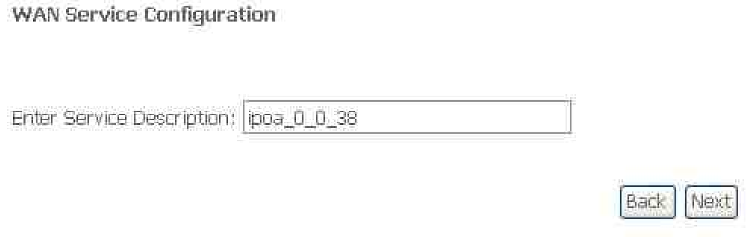
Select a layer 2 interface for this service

Note: For ATM interface, the descriptor string is (portId_vpi_vci)
For PTM interface, the descriptor string is (portId_high_low)
Where portId=0 --> DSL Latency PATH0
portId=1 --> DSL Latency PATH1
portId=4 --> DSL Latency PATH0&1
low =0 --> Low PTM Priority not set
low =1 --> Low PTM Priority set
high =0 --> High PTM Priority not set
high =1 --> High PTM Priority set

ipoa0/(0_0_38)

Figure 53 WAN service interface configuration (IPoA)

Step4 Select the proper interface for the WAN service ,and then click **Next** to display the following page.

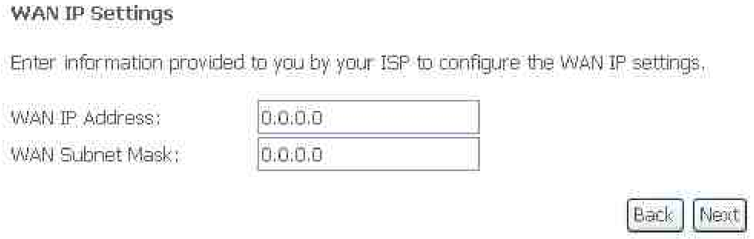


WAN Service Configuration

Enter Service Description: ipoa_0_0_38

Figure 54 WAN service configuration (IPoA)

Step5 In this page, you may modify the service description. Click **Next** to display the following page.



WAN IP Settings

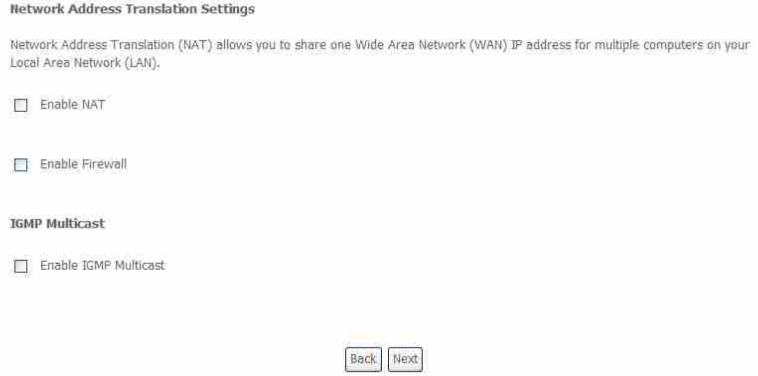
Enter information provided to you by your ISP to configure the WAN IP settings.

WAN IP Address: 0.0.0.0

WAN Subnet Mask: 0.0.0.0

Figure 55 WAN IP settings (IPoA)

Step6 In this page, enter the WAN IP address and the WAN subnet mask provided by your ISP and then click **Next** to display the following page.



Network Address Translation Settings

Network Address Translation (NAT) allows you to share one Wide Area Network (WAN) IP address for multiple computers on your Local Area Network (LAN).

□ Enable NAT

□ Enable Firewall

IGMP Multicast

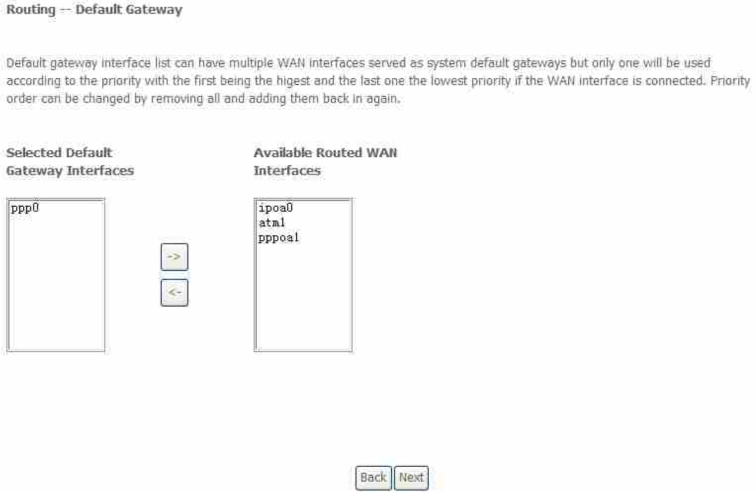
□ Enable IGMP Multicast

Figure 56 Network address translation settings (IPoA)

In this page, Network Address Translation (NAT) allows you to share one Wide Area Network (WAN) IP address for multiple computers on your Local Area Network (LAN).

If you do not want to enable NAT, and wish the user of modem to access the Internet normally, you need to add a route on the uplink equipment. Otherwise, the access to the Internet fails. Normally, please enable the NAT function.

Step7 After finishing setting, click **Next** to display the following page.



Routing -- Default Gateway

Default gateway interface list can have multiple WAN interfaces served as system default gateways but only one will be used according to the priority with the first being the higest and the last one the lowest priority if the WAN interface is connected. Priority order can be changed by removing all and adding them back in again.

Selected Default Gateway Interfaces

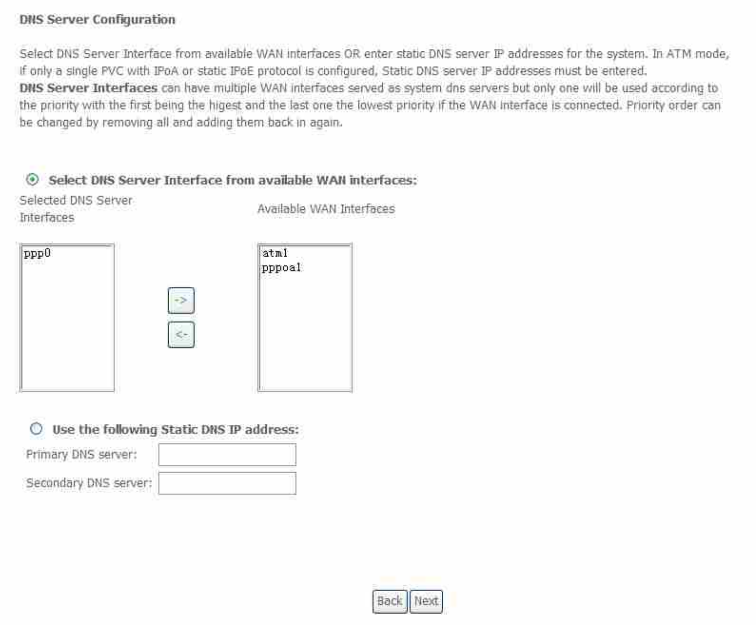
ppp0

Available Routed WAN Interfaces

ipoa0
atm1
pppoa1

Figure 57 Routing-default gateway (IPoA)

Step8 In this page, select a preferred WAN interface as the system default gateway and then click **Next** to display the following page.



DNS Server Configuration

Select DNS Server Interface from available WAN interfaces OR enter static DNS server IP addresses for the system. In ATM mode, if only a single PVC with IPoA or static IPoE protocol is configured, Static DNS server IP addresses must be entered.
DNS Server Interfaces can have multiple WAN interfaces served as system dns servers but only one will be used according to the priority with the first being the higest and the last one the lowest priority if the WAN interface is connected. Priority order can be changed by removing all and adding them back in again.

● **Select DNS Server Interface from available WAN interfaces:**

Selected DNS Server Interfaces: ppp0

Available WAN Interfaces: atm1, pppoa1

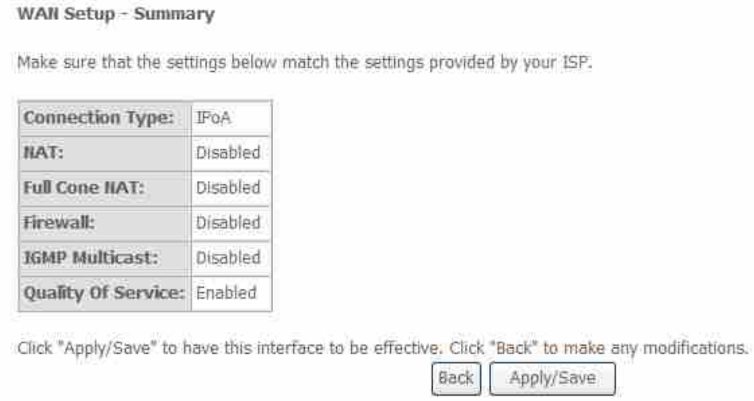
○ **Use the following Static DNS IP address:**

Primary DNS server:

Secondary DNS server:

Figure 58 DNS server configuration (IPoA)

Step9 In this page, you should use a static DNS IP address for IPoA mode. Select the proper DNS server interface and enter the primary DNS server and the secondary DNS server. Click **Next** to display the following page.



WAN Setup - Summary

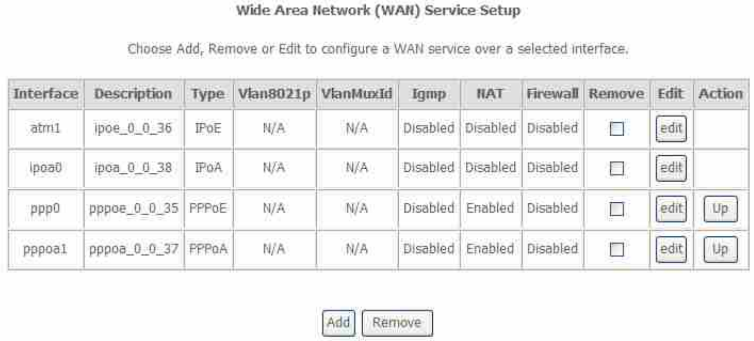
Make sure that the settings below match the settings provided by your ISP.

Connection Type:	IPoA
NAT:	Disabled
Full Cone NAT:	Disabled
Firewall:	Disabled
IGMP Multicast:	Disabled
Quality Of Service:	Enabled

Click "Apply/Save" to have this interface to be effective. Click "Back" to make any modifications.

Figure 59 IPoA summary

Step10 In this page, it displays the information about the IPoA settngs. Click **Apply/Save** to save and apply the settings, and then the following page appears. You can modify the settings by clicking the **Back** button if necessary.



Wide Area Network (WAN) Service Setup

Choose Add, Remove or Edit to configure a WAN service over a selected interface.

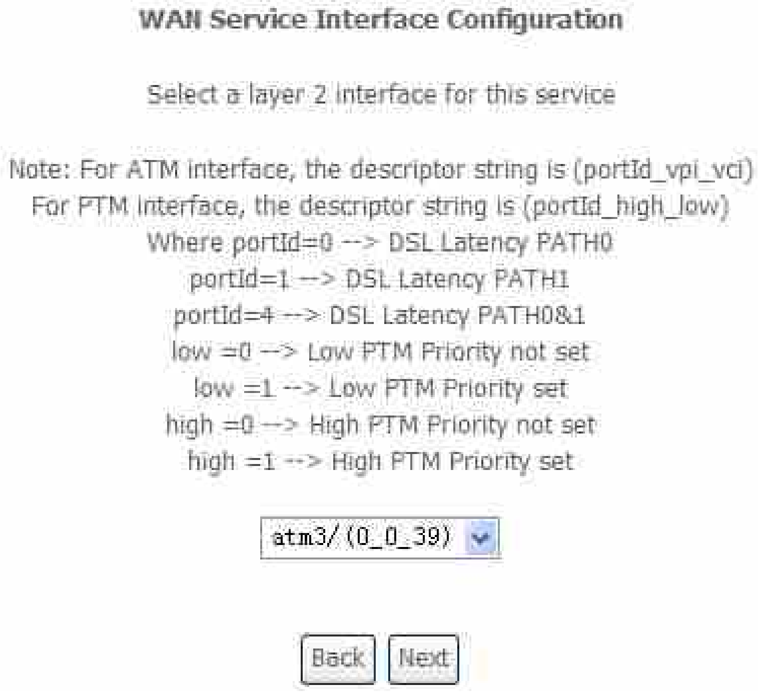
Interface	Description	Type	Vlan8021p	VlanMuxId	Igmp	NAT	Firewall	Remove	Edit	Action
atm1	ipoe_0_0_36	IPoE	N/A	N/A	Disabled	Disabled	Disabled	□	edit	
ipoa0	ipoa_0_0_38	IPoA	N/A	N/A	Disabled	Disabled	Disabled	□	edit	
ppp0	pppoe_0_0_35	PPPoE	N/A	N/A	Disabled	Enabled	Disabled	□	edit	Up
pppoa1	pppoa_0_0_37	PPPoA	N/A	N/A	Disabled	Enabled	Disabled	□	edit	Up

Figure 60 Completing the settings of IPoA WAN service

Adding a Bridge WAN service

This section describes the steps for adding the br_0_0_39 (Bridge mode) servic

Step1 In the **Wide Area Network (WAN) Service Setup** page, click the **Add** button to display the following page. (At first, you must add a proper ATM configuration for this WAN service.) Click the **Add** button to display the following page.



WAN Service Interface Configuration

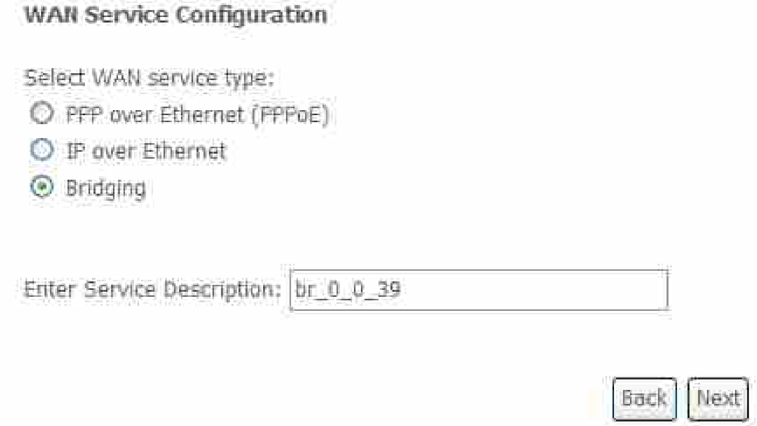
Select a layer 2 interface for this service

Note: For ATM interface, the descriptor string is (portId_vpi_vci)
For PTM interface, the descriptor string is (portId_high_low)
Where portId=0 --> DSL Latency PATH0
portId=1 --> DSL Latency PATH1
portId=4 --> DSL Latency PATH0&1
low =0 --> Low PTM Priority not set
low =1 --> Low PTM Priority set
high =0 --> High PTM Priority not set
high =1 --> High PTM Priority set

atm3/(0_0_39)

Figure 61 WAN service interface configuration (bridge)

Step2 Select the proper ATM Interface, for example atm3/(0_0_39) and then click **Next** to display the following page.



WAN Service Configuration

Select WAN service type:

○ PPP over Ethernet (PPPoE)

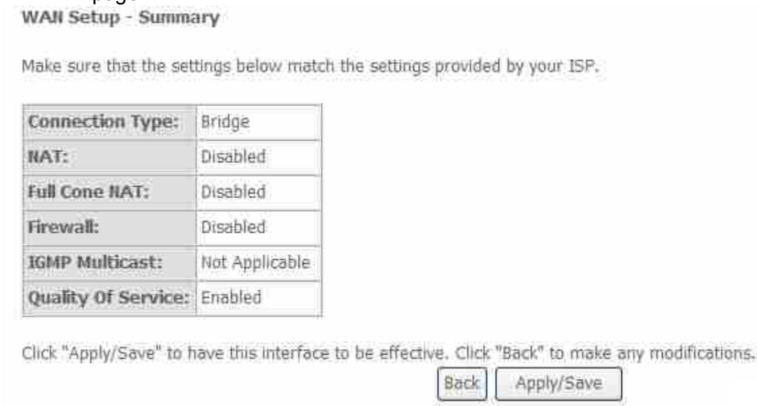
○ IP over Ethernet

● Bridging

Enter Service Description: br_0_0_39

Figure 62 WAN service configuration (bridge)

Step3 In this page, you can select the WAN service type, and modify the service description. After finishing setting, click **Next** to display the following page.



WAN Setup - Summary

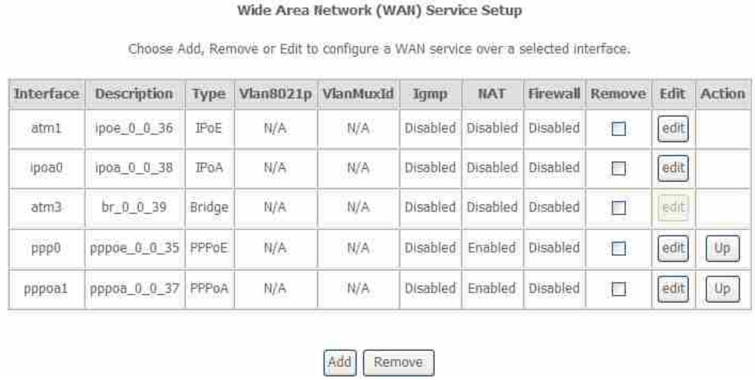
Make sure that the settings below match the settings provided by your ISP.

Connection Type:	Bridge
NAT:	Disabled
Full Cone NAT:	Disabled
Firewall:	Disabled
IGMP Multicast:	Not Applicable
Quality Of Service:	Enabled

Click "Apply/Save" to have this interface to be effective. Click "Back" to make any modifications.

Figure 63 Bridge summary

Step4 In this page, it displays the information about the bridge settngs. Click **Apply/Save** to save and apply the settings, and then the following page appears. You can modify the settings by clicking the **Back** button if necessary.



Wide Area Network (WAN) Service Setup

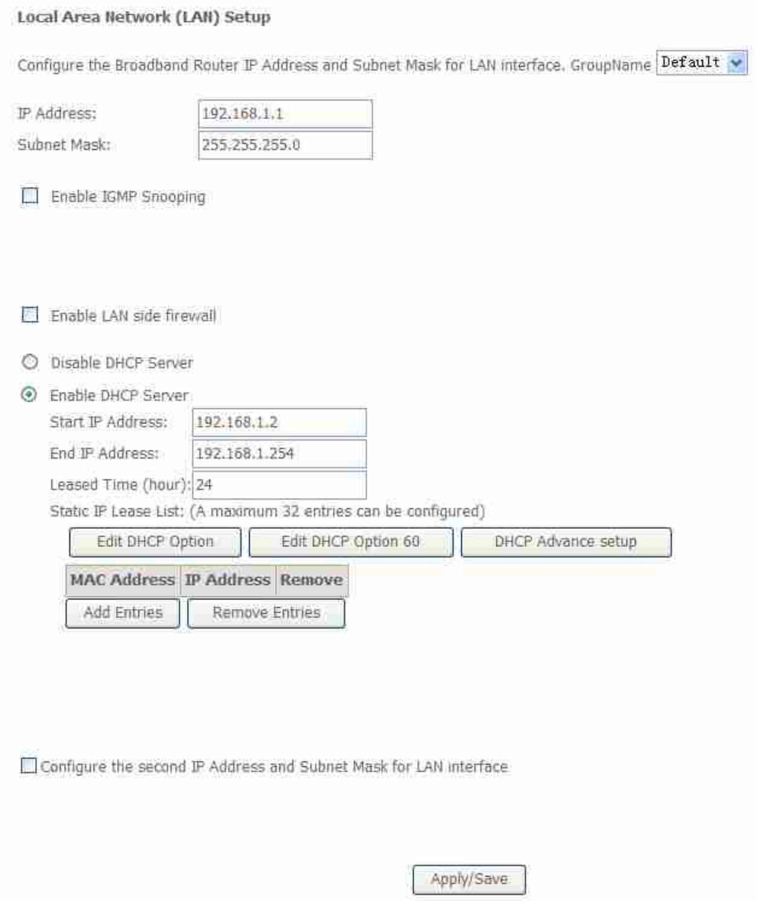
Choose Add, Remove or Edit to configure a WAN service over a selected interface.

Interface	Description	Type	Vlan8021p	VlanMuxId	Igmp	NAT	Firewall	Remove	Edit	Action
atm1	ipoe_0_0_36	IPoE	N/A	N/A	Disabled	Disabled	Disabled	□	edit	
ipoa0	ipoa_0_0_38	IPoA	N/A	N/A	Disabled	Disabled	Disabled	□	edit	
atm3	br_0_0_39	Bridge	N/A	N/A	Disabled	Disabled	Disabled	□	edit	
ppp0	pppoe_0_0_35	PPPoE	N/A	N/A	Disabled	Enabled	Disabled	□	edit	Up
pppoa1	pppoa_0_0_37	PPPoA	N/A	N/A	Disabled	Enabled	Disabled	□	edit	Up

Figure 64 Completing the settings of bridge WAN service

5.2.3 LAN Configuration

Choose **Advanced Setup > LAN**, and the following page appears.



Local Area Network (LAN) Setup

Configure the Broadband Router IP Address and Subnet Mask for LAN interface. GroupName Default

IP Address: 192.168.1.1

Subnet Mask: 255.255.255.0

□ Enable IGMP Snooping

□ Enable LAN side firewall

○ Disable DHCP Server

● Enable DHCP Server

Start IP Address: 192.168.1.2

End IP Address: 192.168.1.254

Leased Time (hour): 24

Static IP Lease List: (A maximum 32 entries can be configured)

MAC Address	IP Address	Remove

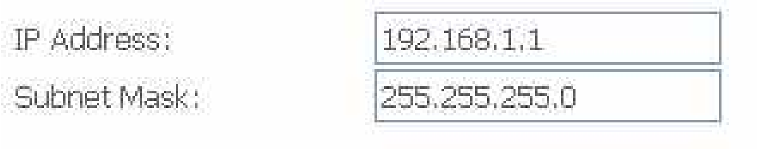
□ Configure the second IP Address and Subnet Mask for LAN interface

Figure 65 LAN setup

In this page, you can configure an IP address for the DSL router, enable I snooping, enable the LAN side firewall, enable or disable the DHCP server, ec

DHCP option, configure the DHCP advanced setup and set the binding between a MAC address and an IP address.

Configuring the Private IP Address for the DSL Router



IP Address: 192.168.1.1

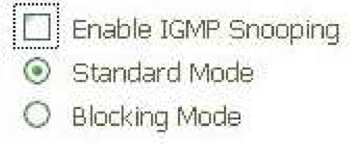
Subnet Mask: 255.255.255.0

Figure 66 Configuring the IP address of the DSL router

In this page, you can modify the IP address of the device. The preset IP address is 192.168.1.1.

Enabling IGMP Snooping

IGMP snooping enables the router to forward multicast traffic intelligently, instead of flooding all ports in the VLAN. With IGMP snooping, the router listens to IGMP membership reports, queries and leave messages to identify the switch ports that are members of multicast groups. Multicast traffic will only be forwarded to ports identified as members of the specific multicast group or groups.



□ Enable IGMP Snooping

● Standard Mode

○ Blocking Mode

Figure 67 Configuring the IGMP snooping

In this page, you can enable the IGMP snooping and select the proper mode for IGMP snooping.

Enabling the LAN Side Firewall

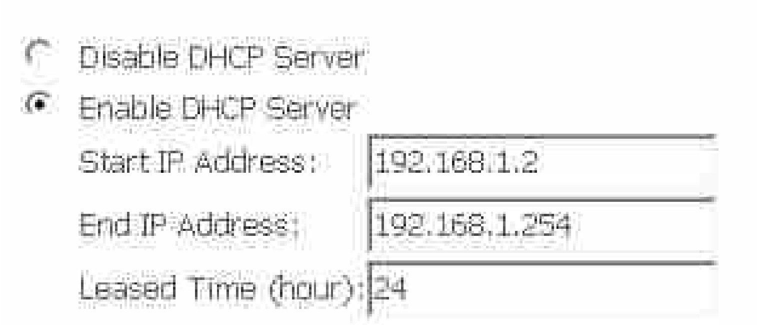
Firewall can prevent unexpected traffic on the Internet from your host in the LAN

□ Enable LAN side firewall

Figure 68 Setting the LAN side firewall

In this page, you can enable or disable the LAN side firewall.

Configuring the DHCP Server



○ Disable DHCP Server

● Enable DHCP Server

Start IP Address: 192.168.1.2

End IP Address: 192.168.1.254

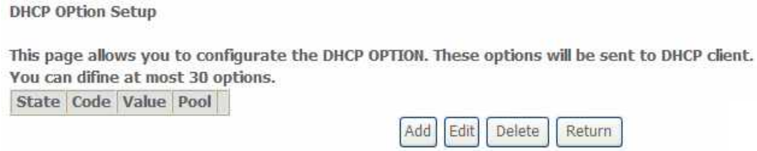
Leased Time (hour): 24

Figure 69 Setting the DHCP server

If you enable the DHCP sever, the clients will automatically acquire the IP address from the DHCP server. If the DHCP server is disabled, you need to manually set the start IP address, end IP address and the lease time for the clients in the LAN.

Editing the DHCP Option

Click the **Edit DHCP Option** button in the **Local Area Network (LAN) Setup** page to display the **DHCP Option Setup** page.



DHCP OPtion Setup

This page allows you to configurate the DHCP OPTION. These options will be sent to DHCP client. You can difine at most 30 options.

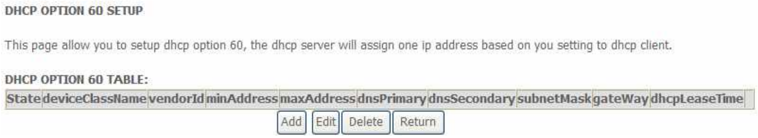
State	Code	Value	Pool

Figure 70 Configuring the DHCP options

In this page, you can add, edit or delete the DHCP options, and these options will be sent to the DHCP client.

Editing the DHCP Option60

Click the **Edit DHCP Option60** button in the **Local Area Network (LAN) Setup** page to display the **DHCP Option60 Setup** page.



DHCP OPTION 60 SETUP

This page allow you to setup dhcp option 60, the dhcp server will assign one ip address based on you setting to dhcp client.

DHCP OPTION 60 TABLE:

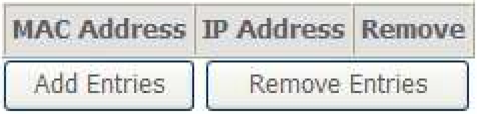
State	deviceClassName	vendorId	minAddress	maxAddress	dnsPrimary	dnsSecondary	subnetMask	gateWay	dhcpLeaseTime

Figure 71 Configuring the DHCP60 options

In this page, you can add, edit or delete the DHCP60 options.

Configuring the DHCP Static IP Lease List

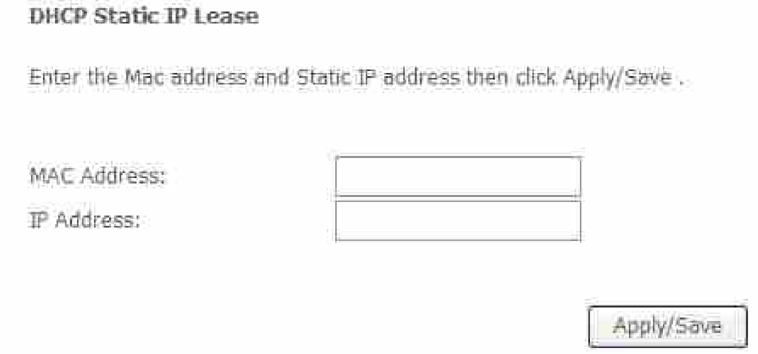
The lease list of static IP address can reserve the static IP addresses for the hosts with the specific MAC addresses. When a host whose MAC address is in the lease list of static IP address requests the DHCP server for an IP address, the DHCP server assigns the reserved IP address to the host.



MAC Address	IP Address	Remove

Figure 72 DHCP static lease list

Click the **Add Entries** button in the **Local Area Network (LAN) Setup** page to display the **DHCP Static IP Lease** page.



DHCP Static IP Lease

Enter the Mac address and Static IP address then click Apply/Save .

MAC Address:

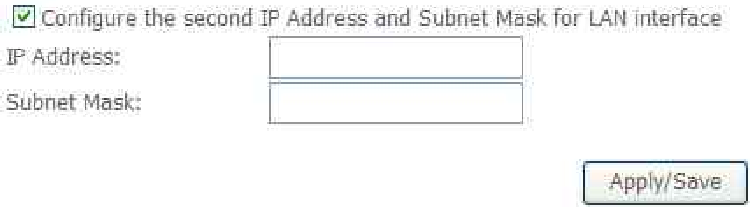
IP Address:

Figure 73 Adding an entry of DHCP static IP lease list

In this page, enter the MAC address of the LAN host and the static IP address that is reserved for the host, and then click the **Apply/Save** button to apply the settings.

Configuring the Second IP Address and Subnet Mask for a LAN Interface

In the **Local Area Network (LAN) Setup** page, you are allowed to set the second IP address and the subnet mask for a LAN interface.



☑ Configure the second IP Address and Subnet Mask for LAN interface

IP Address:

Subnet Mask:

Figure 74 Setting the second IP address and subnet mask

After enabling **Configure the second IP Address and Subnet Mask for LAN interface**, enter an IP address and a subnet mask for the LAN interface.

After finishing setting, click the **Apply/Save** button to apply the settings.

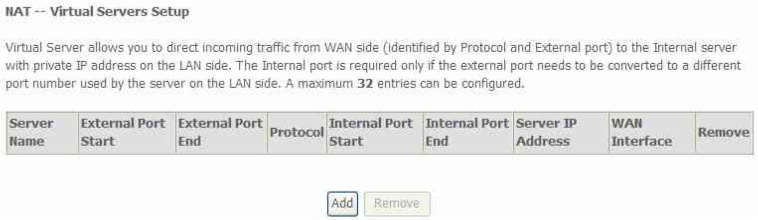
5.2.4 NAT

Note:
The NAT information is not displayed in the bridge mode.

Virtual Servers

Firewall can prevent unexpected traffic on the Internet from your host on the LAN. The virtual server can create a channel that can pass through the firewall. In that case, the host on the Internet can communicate with a host on your LAN within certain port range.

Choose **Advanced Setup > NAT > Virtual Servers**, and the following page appears.



NAT -- Virtual Servers Setup

Virtual Server allows you to direct incoming traffic from WAN side (identified by Protocol and External port) to the Internal server with private IP address on the LAN side. The Internal port is required only if the external port needs to be converted to a different port number used by the server on the LAN side. A maximum 32 entries can be configured.

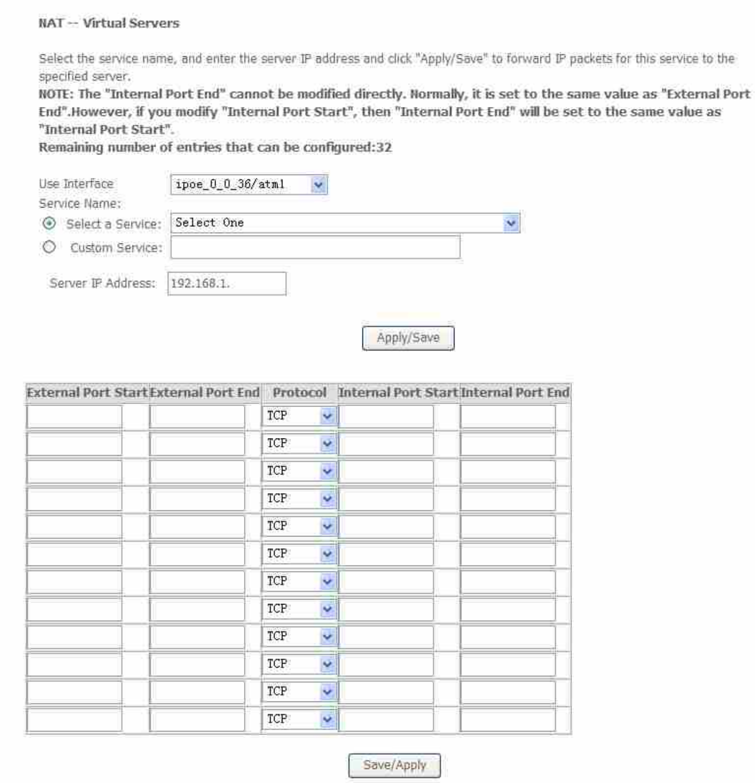
Server Name	External Port Start	External Port End	Protocol	Internal Port Start	Internal Port End	Server IP Address	WAN Interface	Remove

Figure 75 Virtual server setup

In this page, you are allowed to add or remove a virtual server entry.

To add a virtual server, do as follows:

Click the **Add** button to display the following page.



NAT -- Virtual Servers

Select the service name, and enter the server IP address and click "Apply/Save" to forward IP packets for this service to the specified server.
NOTE: The "Internal Port End" cannot be modified directly. Normally, it is set to the same value as "External Port End".However, if you modify "Internal Port Start", then "Internal Port End" will be set to the same value as "Internal Port Start".
Remaining number of entries that can be configured:32

Use Interface: ipoe_0_0_36/atm1
Service Name:
● Select a Service: Select One
○ Custom Service:
Server IP Address: 192.168.1.

External Port Start	External Port End	Protocol	Internal Port Start	Internal Port End
		TCP		
		TCP		
		TCP		
		TCP		
		TCP		
		TCP		
		TCP		
		TCP		
		TCP		
		TCP		
		TCP		
		TCP		

Figure 76 Adding an entry of virtual server

- **Use interface**: Select an interface that you want to configure.
- **Select a Service**: Select a proper service in the drop-down list.
- **Custom Server**: Enter a new service name to establish a user service type.
- **Server IP Address**: Assign an IP address to virtual server.
- **External Port Start**: When selecting a service, the port numbe automatically be displayed. You can modify it if necessary.

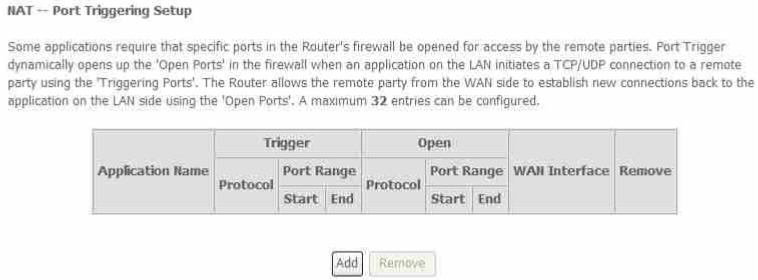
- **External Port End**: When selecting a service, the port number will automatically be displayed. You can modify it if necessary.
- **Protocol**: You may select TCP/UDP, TCP, or UDP in the drop-down list.
- **Internal Port Start**: When selecting a service, the port number will automatically be displayed. You can modify it if necessary.
- **Internal Port End**: When selecting a service, the port number will automatically be displayed. You can modify it if necessary.

After finishing setting, click **Save/Apply** to save and apply the settings.

Port Triggering

Some applications need some ports to be opened in the firewall for the remote access. When an application initializes a TCP/UDP to connect to a remote user, port triggering dynamically opens the open ports of the firewall.

Choose **Advanced Settings > NAT > Port Triggering**, and the following page appears.



NAT -- Port Triggering Setup

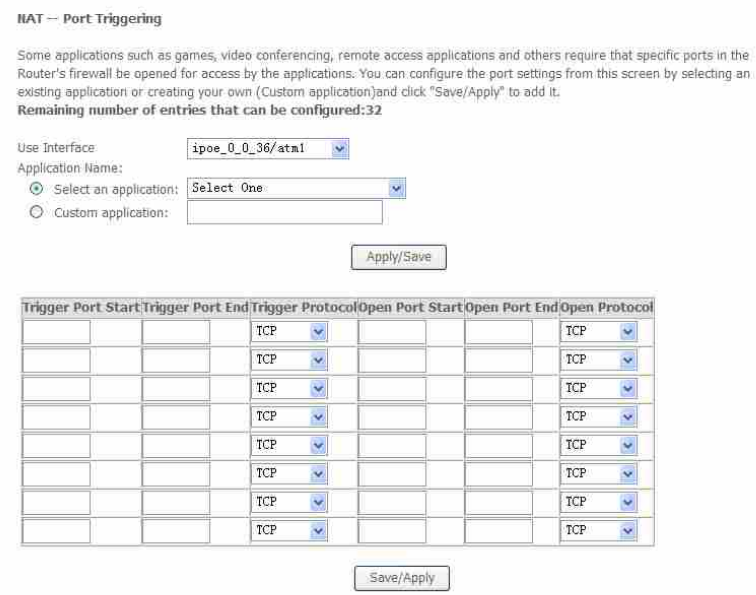
Some applications require that specific ports in the Router's firewall be opened for access by the remote parties. Port Trigger dynamically opens up the 'Open Ports' in the firewall when an application on the LAN initiates a TCP/UDP connection to a remote party using the 'Triggering Ports'. The Router allows the remote party from the WAN side to establish new connections back to the application on the LAN side using the 'Open Ports'. A maximum 32 entries can be configured.

Application Name	Trigger			Open			WAN Interface	Remove
	Protocol	Port Range		Protocol	Port Range			
		Start	End		Start	End		

Figure 77 Port triggering setup

In this page, you may add or delete an entry of port triggering.

Click the **Add** button to display the following page.



NAT -- Port Triggering

Some applications such as games, video conferencing, remote access applications and others require that specific ports in the Router's firewall be opened for access by the applications. You can configure the port settings from this screen by selecting an existing application or creating your own (Custom application)and click "Save/Apply" to add it.

Remaining number of entries that can be configured:32

Use Interface: ipoe_0_0_36/atm1

Application Name:

● Select an application: Select One

○ Custom application:

Trigger Port Start	Trigger Port End	Trigger Protocol	Open Port Start	Open Port End	Open Protocol
		TCP			TCP
		TCP			TCP
		TCP			TCP
		TCP			TCP
		TCP			TCP
		TCP			TCP
		TCP			TCP
		TCP			TCP

Figure 78 Adding an entry of port triggering

- **Use interface**: Select an interface that you want to configure.
- **Select an application:** Select a proper application in the drop-down list.
- **Custom application:** Manually define an application.
- **Trigger port Start:** The start port number that LAN uses to trigger the open port.
- **Trigger port End:** The end port number that LAN uses to trigger the open port.
- **Trigger Protocol:** Select the application protocol. You may select TCP/UDP, TCP, or UDP.
- **Open Port Start:** The start port number that is opened to WAN.
- **Open Port End:** The end port number that is opened to WAN.

- **Open Protocol:** Select the proper protocol that is opened to WAN. You may select TCP/UDP, TCP, or UDP.

After finishing setting, click **Save/Apply** to apply the settings.

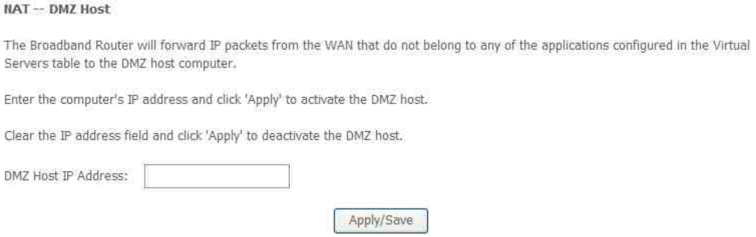
Note:

You can use a single port number, several port numbers separated by commas, port blocks consisting of two port numbers separated by a dash, or any combination of these, for example 80, 90-140, 180.

DMZ Host

DMZ allows all the ports of a PC on your LAN to be exposed to the Internet. Set the IP address of the PC to be DMZ host, so that the DMZ host will not be blocked by firewall.

Choose **Advanced Setup > NAT > DMZ host** to display the following page.



NAT -- DMZ Host

The Broadband Router will forward IP packets from the WAN that do not belong to any of the applications configured in the Virtual Servers table to the DMZ host computer.

Enter the computer's IP address and click 'Apply' to activate the DMZ host.

Clear the IP address field and click 'Apply' to deactivate the DMZ host.

DMZ Host IP Address:

Figure 79 DMZ host

In this page, enter the IP address of the DMZ host.

After finishing the settings, click the **Apply/Save** button to apply the settings.

If you want to clear the DMZ function of the host, please delete the IP address of the host in the field of **DMZ Host IP Address**, and then click the **Apply/Save** button.

5.2.5 Security

By default, the firewall is enabled. The firewall is used to block the file transmission between the Internet and your PC. It serves as a safety guard and permits only the authorized files to be sent to the LAN.

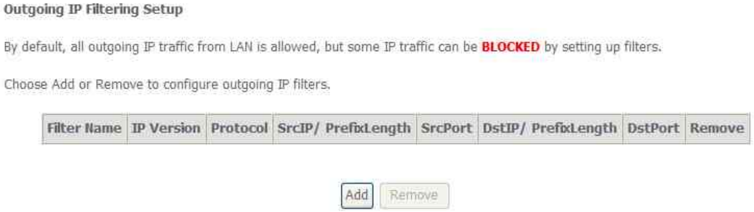
Note:

If the DSL router is configured to be bridge mode, IP filtering is disabled and the IP filtering interface does not appear.

Outgoing IP Filtering Setup

When the outgoing IP filtering settings is enabled on the DSL router, the security functions for the local network are enabled at the same time.

Choose **Security > IP Filtering > Outgoing** and the following page appears.



Outgoing IP Filtering Setup

By default, all outgoing IP traffic from LAN is allowed, but some IP traffic can be **BLOCKED** by setting up filters.

Choose Add or Remove to configure outgoing IP filters.

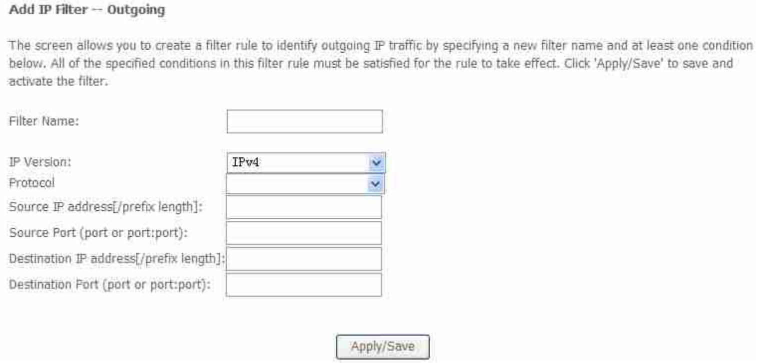
Filter Name	IP Version	Protocol	SrcIP/ PrefixLength	SrcPort	DstIP/ PrefixLength	DstPort	Remove

Figure 80 Outgoing IP filtering setup

By default, all outgoing IP traffic from LAN is allowed, but some IP traffic can be blocked by setting filters.

In this page, you can add or remove the outgoing IP filtering rules.

Click the **Add** button to display the following page.



Add IP Filter -- Outgoing

The screen allows you to create a filter rule to identify outgoing IP traffic by specifying a new filter name and at least one condition below. All of the specified conditions in this filter rule must be satisfied for the rule to take effect. Click 'Apply/Save' to save and activate the filter.

Filter Name:	
IP Version:	IPv4
Protocol	
Source IP address[/prefix length]:	
Source Port (port or port:port):	
Destination IP address[/prefix length]:	
Destination Port (port or port:port):	

Figure 81 Adding an IP outgoing filtering rule

In this page, you can create a filter rule to identify the outgoing IP traff specifying a new filter name and at least one condition.

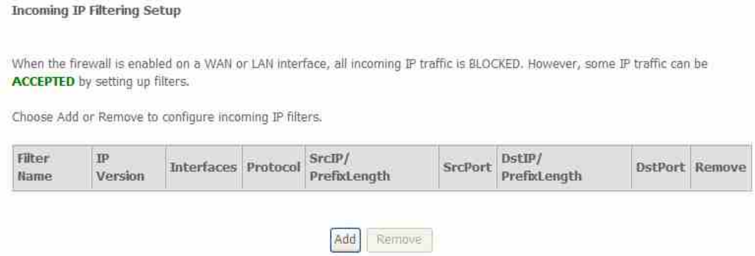
- **Filter Name:** Set the filter name.
- **IP Version:** Select the proper IP version in the drop-down list.
- **Protocol:** Select a protocol that needs to be filtered.
- **Source IP address [/prefix length]**: Set the range of local IP address.
- **Source Port (port or port: port)**: Set the local port.
- **Destination IP address [/prefix length]**: Set the range of IP address of the exterior network.
- **Destination Port (port or port: port)**: Set the port of the exterior network.

After finishing setting, click **Apply/Save** to save and activate the filtering rule.

Incoming IP Filtering Setup

The incoming IP filter is used to block and permit the IP packet transmisstion from the internet.

Choose **Security > IP Filtering > Incoming** and the following page appears.



Incoming IP Filtering Setup

When the firewall is enabled on a WAN or LAN interface, all incoming IP traffic is BLOCKED. However, some IP traffic can be ACCEPTED by setting up filters.

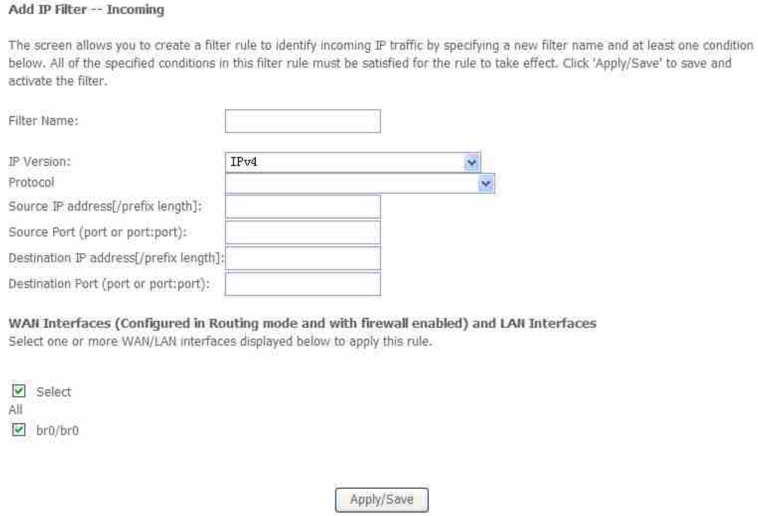
Choose Add or Remove to configure incoming IP filters.

Filter Name	IP Version	Interfaces	Protocol	SrcIP/ PrefixLength	SrcPort	DstIP/ PrefixLength	DstPort	Remove

Figure 82 Incoming IP filtering setup

In this page, you can add or remove the incoming IP filtering rules.

Click the **Add** button to display the following page.



Add IP Filter -- Incoming

The screen allows you to create a filter rule to identify incoming IP traffic by specifying a new filter name and at least one condition below. All of the specified conditions in this filter rule must be satisfied for the rule to take effect. Click 'Apply/Save' to save and activate the filter.

Filter Name:

IP Version: IPv4

Protocol

Source IP address[/prefix length]:

Source Port (port or port:port):

Destination IP address[/prefix length]:

Destination Port (port or port:port):

WAN Interfaces (Configured in Routing mode and with firewall enabled) and LAN Interfaces

Select one or more WAN/LAN interfaces displayed below to apply this rule.

☑ Select All

☑ br0/br0

Figure 83 Adding an IP incoming filtering rule

In this page, you can create a filter rule to identify the incoming IP traffic by specifying a new filter name and at least one condition, and you must select at least one WAN interface for the rule.

- **Filter Name:** Set the filter name.
- **IP Version:** Select the proper IP version in the drop-down list.
- **Protocol:** Select a protocol that needs to be filtered.
- **Source IP address [/prefix length]**: Set the range of local IP address.
- **Source Port (port or port: port)**: Set the local port.
- **Destination IP address [/prefix length]**: Set the range of IP address of the exterior network.
- **Destination Port (port or port: port)**: Set the port of the exterior network.

After finishing setting, click **Apply/Save** to save and activate the filtering rule.

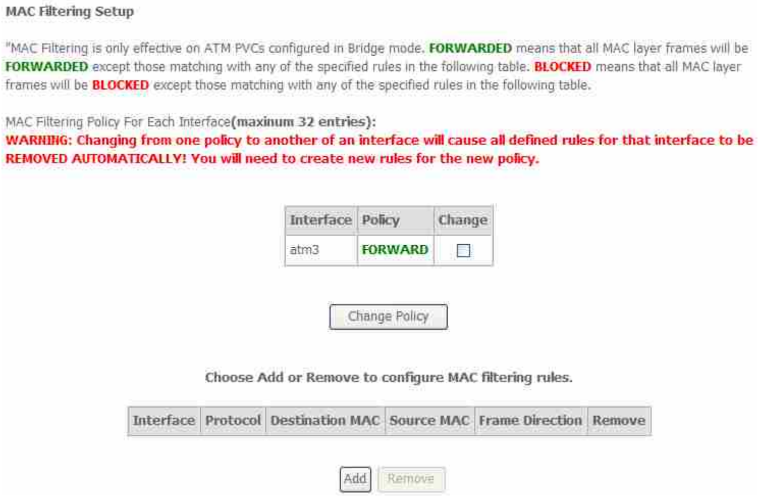
MAC Filtering Setup

In some cases, you may want to manage Layer2 MAC address to block or permit a computer within the home network. When you enable MAC filter rules, the DSL router serves as a firewall that works at layer 2.

Note:

MAC filtering is only effective on ATM PVCs configured in bridge mode. If the ATM PVCs are configured in other routing modes (such as PPPoE mode), the ***MAC Filtering Setup*** *page does not be configured.*

Choose **Security** > **MAC Filtering** and the following page appears.



MAC Filtering Setup

"MAC Filtering is only effective on ATM PVCs configured in Bridge mode. **FORWARDED** means that all MAC layer frames will be **FORWARDED** except those matching with any of the specified rules in the following table. **BLOCKED** means that all MAC layer frames will be **BLOCKED** except those matching with any of the specified rules in the following table.

MAC Filtering Policy For Each Interface**(maxinum 32 entries):**

WARNING: Changing from one policy to another of an interface will cause all defined rules for that interface to be REMOVED AUTOMATICALLY! You will need to create new rules for the new policy.

Interface	Policy	Change
atm3	FORWARD	□

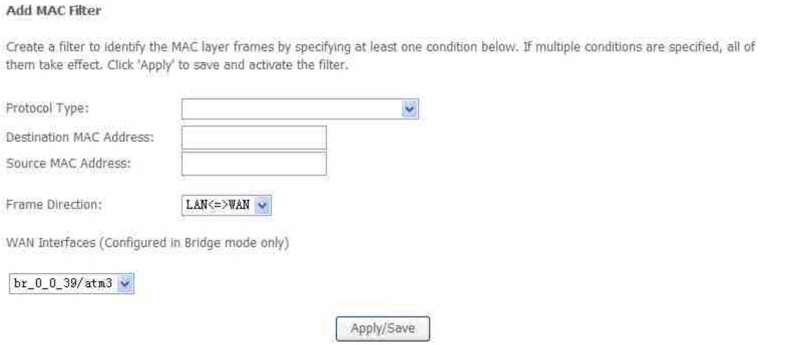
Choose Add or Remove to configure MAC filtering rules.

Interface	Protocol	Destination MAC	Source MAC	Frame Direction	Remove

Figure 84 MAC filtering setup

In this page, you can add or remove the MAC filtering rule. You may change the MAC filtering policy from **FORWARDED** to **BLOCKED** by clicking the **Change Policy** button.

Click the **Add** button to display the following page.



Add MAC Filter

Create a filter to identify the MAC layer frames by specifying at least one condition below. If multiple conditions are specified, all of them take effect. Click 'Apply' to save and activate the filter.

Protocol Type:

Destination MAC Address:

Source MAC Address:

Frame Direction: LAN<=>WAN

WAN Interfaces (Configured in Bridge mode only)

br_0_0_39/atm3

Figure 85 Adding a MAC filter

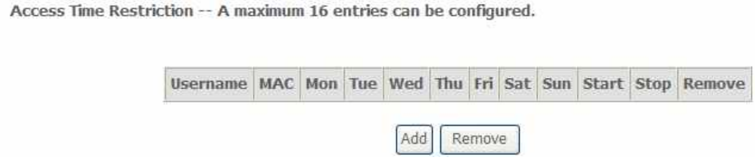
- **Protocol Type**: Select the proper protocol type.
- **Destination MAC Address**: Enter the destination MAC address.
- **Source MAC Address**: Enter the source MAC address.
- **Frame Direction**: The direction of transmission frame.
- **WAN Interface (Configured in bridge mode only)**: Select the proper WAN interface in the drop-down list.

After finishing setting, click **Apply/Save** to save and apply the filtering rule.

5.2.6 Parental Control

Time Restriction

Choose **Advanced Setup > Parental Control > Time Restriction**, and the following page appears.

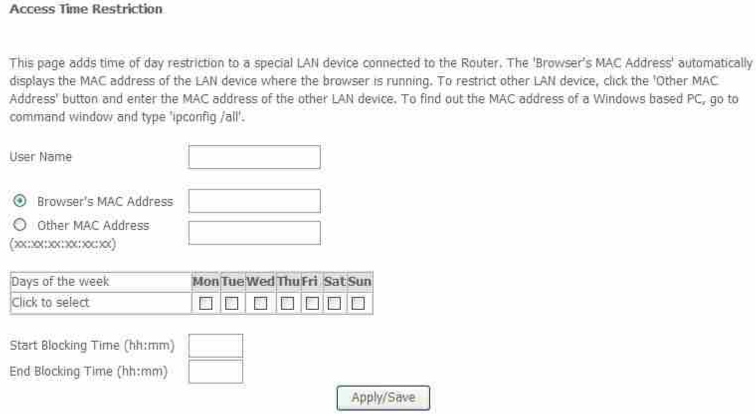


Access Time Restriction -- A maximum 16 entries can be configured.

Username	MAC	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Start	Stop	Remove

Figure 86 Time restriction setup

Click the **Add** button to display the following page.



Access Time Restriction

This page adds time of day restriction to a special LAN device connected to the Router. The 'Browser's MAC Address' automatically displays the MAC address of the LAN device where the browser is running. To restrict other LAN device, click the 'Other MAC Address' button and enter the MAC address of the other LAN device. To find out the MAC address of a Windows based PC, go to command window and type 'ipconfig /all'.

User Name

● Browser's MAC Address

○ Other MAC Address (xx:xx:xx:xx:xx:xx)

Days of the week	Mon	Tue	Wed	Thu	Fri	Sat	Sun
Click to select	□	□	□	□	□	□	□

Start Blocking Time (hh:mm)

End Blocking Time (hh:mm)

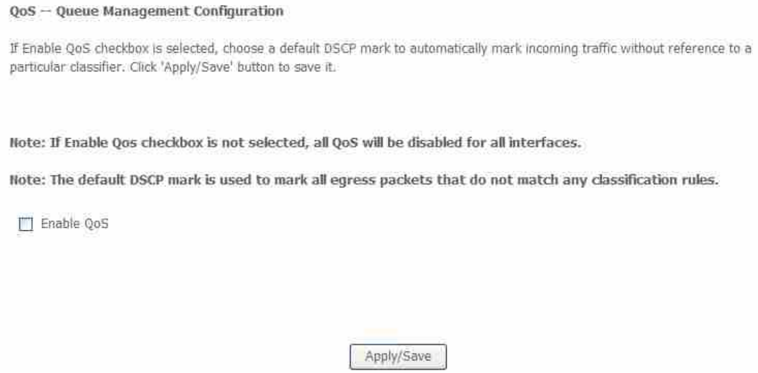
Figure 87 Adding a time restriction rule

This page is used to control the time restriction to a special LAN device that connects to the DSL router. In this page, se the user name and configure the time settings. After finishing setting, click **Apply/Save** to save and apply the settings.

5.2.7 Quality of Service

Enabling QoS

Choose **Advance Setup > Quality of Service** and the following page appears.



QoS -- Queue Management Configuration

If Enable QoS checkbox is selected, choose a default DSCP mark to automatically mark incoming traffic without reference to a particular classifier. Click 'Apply/Save' button to save it.

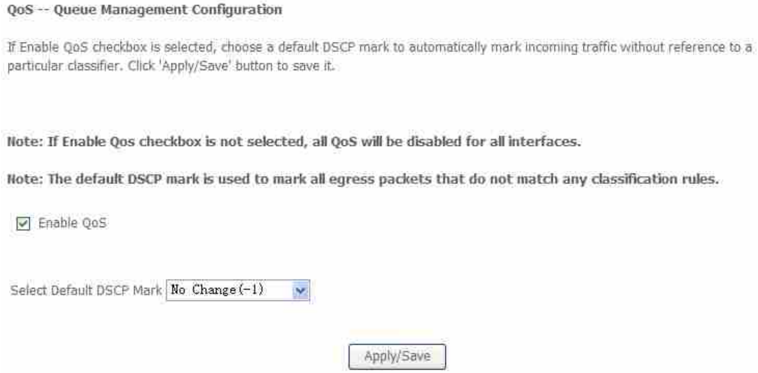
Note: If Enable Qos checkbox is not selected, all QoS will be disabled for all interfaces.

Note: The default DSCP mark is used to mark all egress packets that do not match any classification rules.

□ Enable QoS

Figure 88 QoS queue management configuration

Select **Enable QoS** to enable QoS and configure the default DSCP mark.



QoS -- Queue Management Configuration

If Enable QoS checkbox is selected, choose a default DSCP mark to automatically mark incoming traffic without reference to a particular classifier. Click 'Apply/Save' button to save it.

Note: If Enable Qos checkbox is not selected, all QoS will be disabled for all interfaces.

Note: The default DSCP mark is used to mark all egress packets that do not match any classification rules.

☑ Enable QoS

Select Default DSCP Mark No Change(-1)

Figure 89 Enabling QoS

In this page, enable the QoS function and select the default DSCP mark.

After finishing setting, click **Apply/Save** to save and apply the settings.

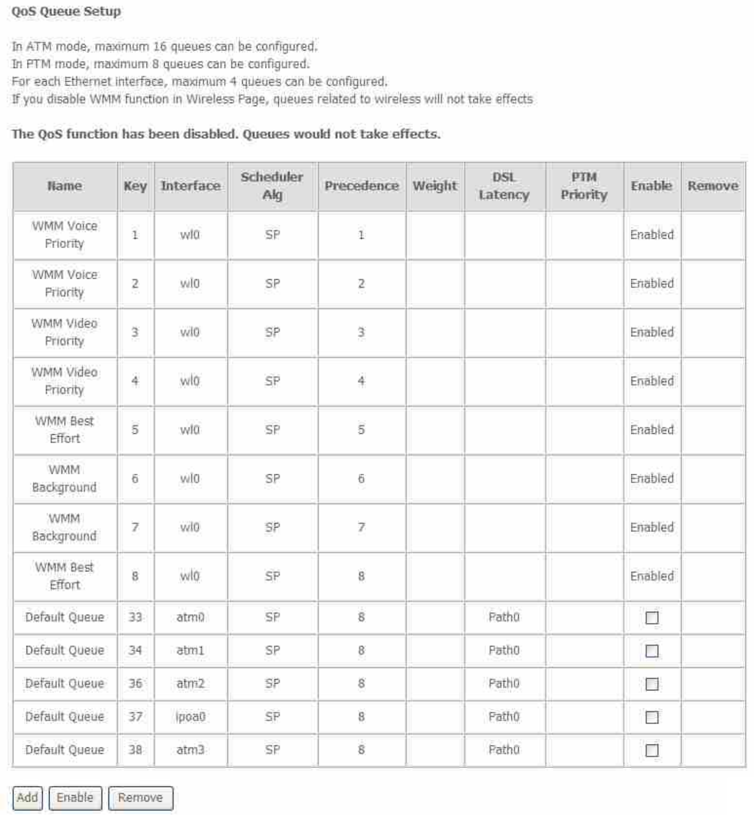
Note:

*If the **Enable Qos** checkbox is not selected, all QoS will be disabled for all interf*

The default DSCP mark is used to mark all egress packets that do not match any classification rules.

Queue Config

Choose **Advanced Setup > Quality of Service > Queue Config**, and the following page appears.



QoS Queue Setup

In ATM mode, maximum 16 queues can be configured.
In PTM mode, maximum 8 queues can be configured.
For each Ethernet interface, maximum 4 queues can be configured.
If you disable WMM function in Wireless Page, queues related to wireless will not take effects

The QoS function has been disabled. Queues would not take effects.

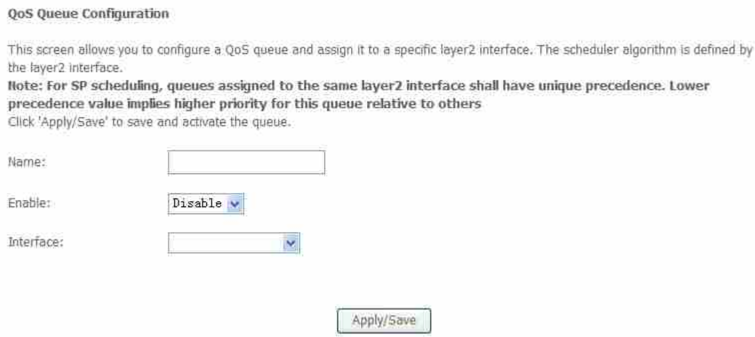
Name	Key	Interface	Scheduler Alg	Precedence	Weight	DSL Latency	PTM Priority	Enable	Remove
WMM Voice Priority	1	wl0	SP	1				Enabled	
WMM Voice Priority	2	wl0	SP	2				Enabled	
WMM Video Priority	3	wl0	SP	3				Enabled	
WMM Video Priority	4	wl0	SP	4				Enabled	
WMM Best Effort	5	wl0	SP	5				Enabled	
WMM Background	6	wl0	SP	6				Enabled	
WMM Background	7	wl0	SP	7				Enabled	
WMM Best Effort	8	wl0	SP	8				Enabled	
Default Queue	33	atm0	SP	8		Path0		□	
Default Queue	34	atm1	SP	8		Path0		□	
Default Queue	36	atm2	SP	8		Path0		□	
Default Queue	37	ipoa0	SP	8		Path0		□	
Default Queue	38	atm3	SP	8		Path0		□	

Figure 90 QoS queue setup

In this page, you can enable, add or remove a QoS rule.

Note:
The lower integer value for precedence indicates the higher priority.

Click the **Add** button to display the following page.



QoS Queue Configuration

This screen allows you to configure a QoS queue and assign it to a specific layer2 interface. The scheduler algorithm is defined by the layer2 interface.
Note: For SP scheduling, queues assigned to the same layer2 interface shall have unique precedence. Lower precedence value implies higher priority for this queue relative to others
Click 'Apply/Save' to save and activate the queue.

Name:

Enable: Disable

Interface:

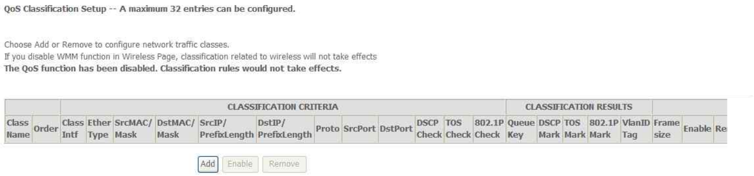
Figure 91 Adding a QoS queue

- **Name:** Enter the name of QoS queue.
- **Enable:** Enable or disable the QoS queue.
- **Interface:** Select the proper interface for the QoS queue.

After finishing setting, click **Apply/Save** to save and apply the settings.

QoS Classification

Choose **Advanced Setup > Quality of Service > Qos Classification** and the following page appears.



QoS Classification Setup -- A maximum 32 entries can be configured.

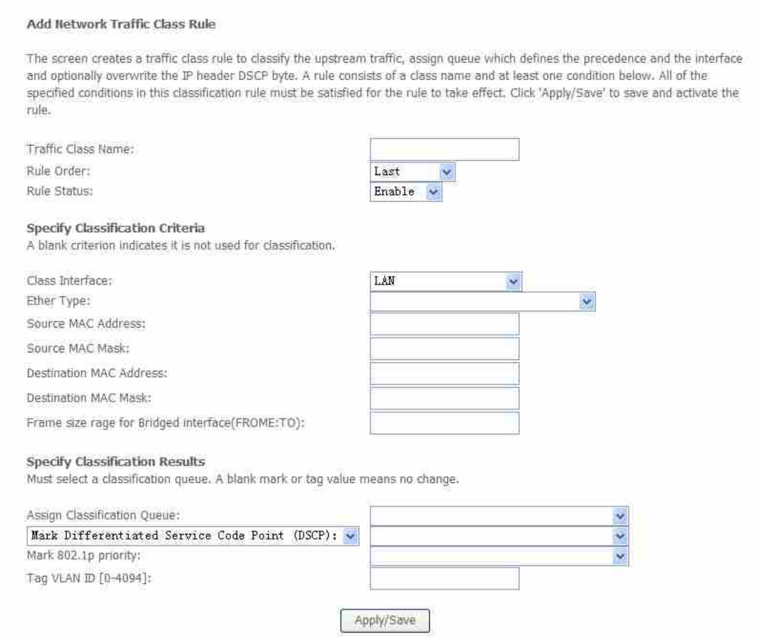
Choose Add or Remove to configure network traffic classes.
If you disable WMM function in Wireless Page, classification related to wireless will not take effects
The QoS function has been disabled. Classification rules would not take effects.

		CLASSIFICATION CRITERIA												CLASSIFICATION RESULTS							
Class Name	Order	Class Intf	Ether Type	SrcMAC/ Mask	DstMAC/ Mask	SrcIP/ PrefixLength	DstIP/ PrefixLength	Proto	SrcPort	DstPort	DSCP Check	TOS Check	802.1P Check	Queue Key	DSCP Mark	TOS Mark	802.1P Mark	VlanID Tag	Frame size	Enable	Re

Figure 92 QoS classification setup

In this page, you can enable, add or remove a QoS classification rule.

Click the **Add** button to display the following page.



Add Network Traffic Class Rule

The screen creates a traffic class rule to classify the upstream traffic, assign queue which defines the precedence and the interface and optionally overwrite the IP header DSCP byte. A rule consists of a class name and at least one condition below. All of the specified conditions in this classification rule must be satisfied for the rule to take effect. Click 'Apply/Save' to save and activate the rule.

Traffic Class Name:	
Rule Order:	Last
Rule Status:	Enable

Specify Classification Criteria

A blank criterion indicates it is not used for classification.

Class Interface:	LAN
Ether Type:	
Source MAC Address:	
Source MAC Mask:	
Destination MAC Address:	
Destination MAC Mask:	
Frame size rage for Bridged interface(FROME:TO):	

Specify Classification Results

Must select a classification queue. A blank mark or tag value means no change.

Assign Classification Queue:	
Mark Differentiated Service Code Point (DSCP):	
Mark 802.1p priority:	
Tag VLAN ID [0-4094]:	

Figure 93 Adding a QoS classification rule

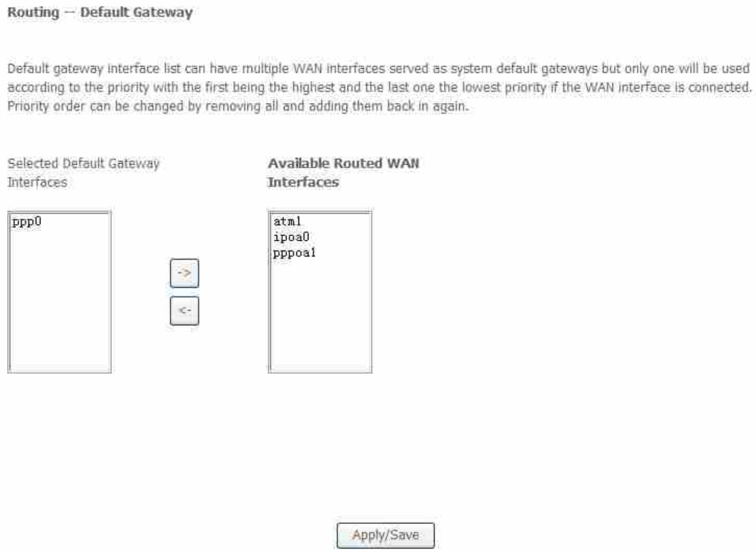
In this page, enter the traffic name, select the rule order and the rule status, and specify the classification criteria and the classification results.

After finishing setting, click **Apply/Save** to save and apply the settings.

5.2.8 Routing

Default Gateway

Choose **Advanced Setup > Routing > Default Gateway**, and the following page appears.



Routing -- Default Gateway

Default gateway interface list can have multiple WAN interfaces served as system default gateways but only one will be used according to the priority with the first being the highest and the last one the lowest priority if the WAN interface is connected. Priority order can be changed by removing all and adding them back in again.

Selected Default Gateway Interfaces		Available Routed WAN Interfaces
ppp0	-> <-	atm1 ipoa0 pppoa1

Figure 94 Default gateway setup

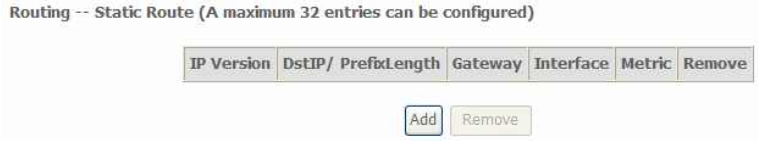
In this page, you can modify the default gateway settings.

Select a proper WAN interface in the drop-down list of **Selected WAN Interface** as the system default gateway.

After finishing setting, click **Apply/Save** to save and apply the settings.

Static Route

Choose **Advanced Setup > Routing > Static Route** and the following page app



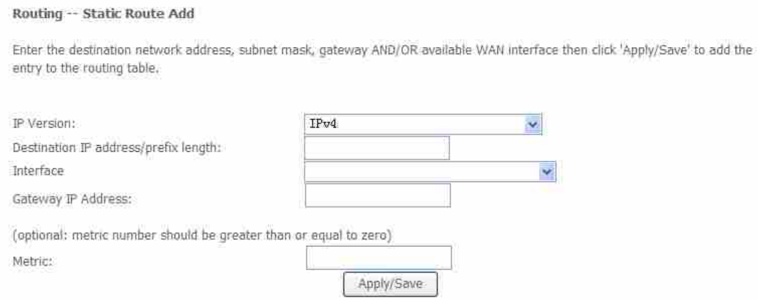
Routing -- Static Route (A maximum 32 entries can be configured)

IP Version	DstIP/ PrefixLength	Gateway	Interface	Metric	Remove

Figure 95 Static routing setup

In this page, you can add or remove a static routing rule of IPV4.

Click the **Add** button to display the following page.



Routing -- Static Route Add

Enter the destination network address, subnet mask, gateway AND/OR available WAN interface then click 'Apply/Save' to add the entry to the routing table.

IP Version:	IPv4
Destination IP address/prefix length:	
Interface	
Gateway IP Address:	

(optional: metric number should be greater than or equal to zero)

Metric:

Figure 96 Adding a static routing rule

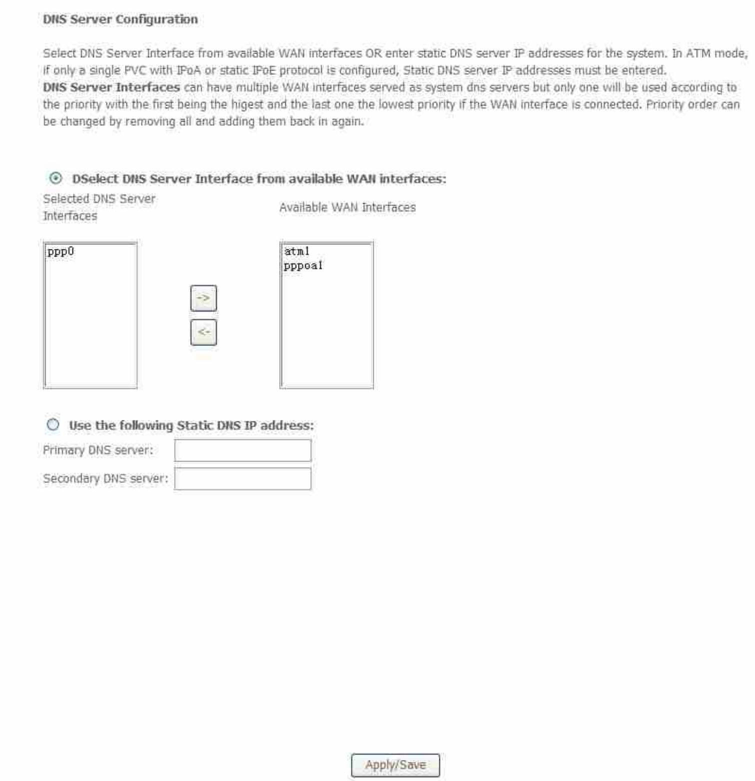
- **IP Version:** Select the IP version to be IPv4.
- **Destination IP address/prefix length:** Enter the destination IP address.
- **Interface:** select the proper interface for the rule.
- **Gateway IP Address:** The next-hop IP address.
- **Metric:** The metric value of routing.

After finishing setting, click **Apply/Save** to save and apply the settings.

5.2.9 DNS

DNS Server

Choose **Advanced Setup > DNS > DNS Server** and the following page appears.



DNS Server Configuration

Select DNS Server Interface from available WAN interfaces OR enter static DNS server IP addresses for the system. In ATM mode, if only a single PVC with IPoA or static IPoE protocol is configured, Static DNS server IP addresses must be entered.
DNS Server Interfaces can have multiple WAN interfaces served as system dns servers but only one will be used according to the priority with the first being the higest and the last one the lowest priority if the WAN interface is connected. Priority order can be changed by removing all and adding them back in again.

● **DSelect DNS Server Interface from available WAN interfaces:**

Selected DNS Server Interfaces	Available WAN Interfaces
ppp0	atm1 pppoa1

○ **Use the following Static DNS IP address:**

Primary DNS server:

Secondary DNS server:

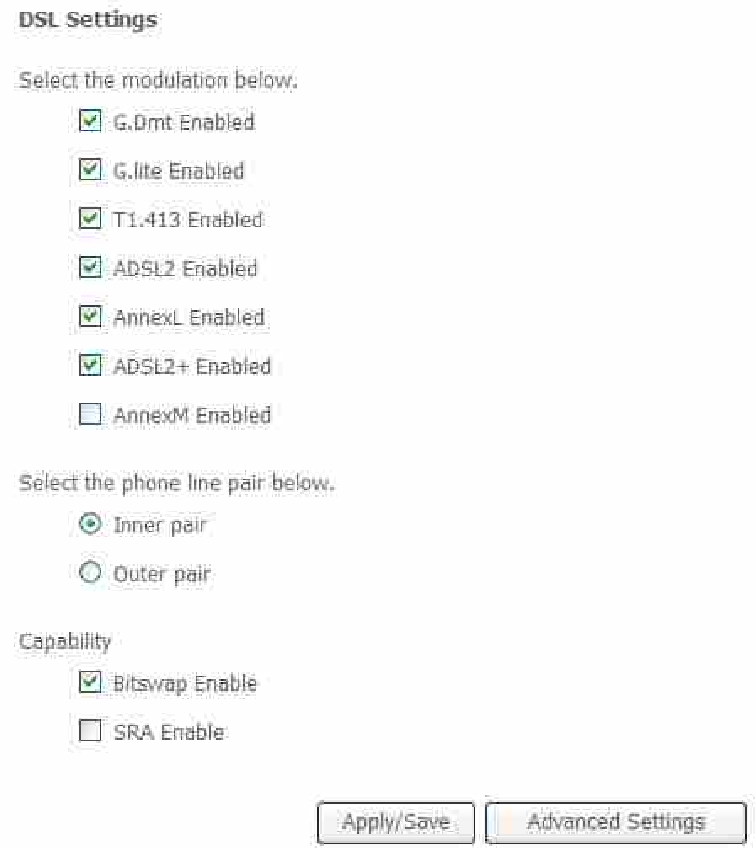
Figure 97 DNS server configuration

In this page, you can select a DNS server interface from the available interfaces, manually enter the DNS server addresses, or obtain the DNS address from a WAN interface.

After finishing setting, click **Apply/Save** to save and apply the settings.

5.2.10 DSL

Choose **Advanced Setup > DSL** and the following page appears.



DSL Settings

Select the modulation below.

☑ G.Dmt Enabled

☑ G.lite Enabled

☑ T1.413 Enabled

☑ ADSL2 Enabled

☑ AnnexL Enabled

☑ ADSL2+ Enabled

□ AnnexM Enabled

Select the phone line pair below.

● Inner pair

○ Outer pair

Capability

☑ Bitswap Enable

□ SRA Enable

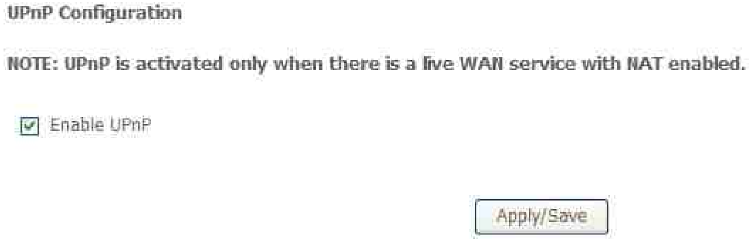
Figure 98 DSL settings

In this page, you can set the DSL settings. Usually, you do not need to modi factory default settings.

After finishing setting, click **Apply/Save** to save and apply the settings.

5.2.11 UPnP

Choose **Advanced Setup > UPnP** and the following page appears.



UPnP Configuration

NOTE: UPnP is activated only when there is a live WAN service with NAT enabled.

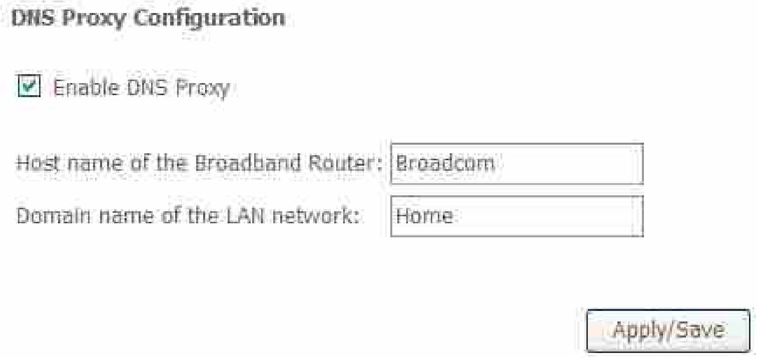
☑ Enable UPnP

Figure 99 UPnP configuration

In this page, you can enable or disable the UPnP function.
After finishing setting, click **Apply/Save** to save and apply the settings.

5.2.12 DNS Proxy

Choose **Advanced Setup > DNS Proxy** and the following page appears.



DNS Proxy Configuration

☑ Enable DNS Proxy

Host name of the Broadband Router: Broadcom

Domain name of the LAN network: Home

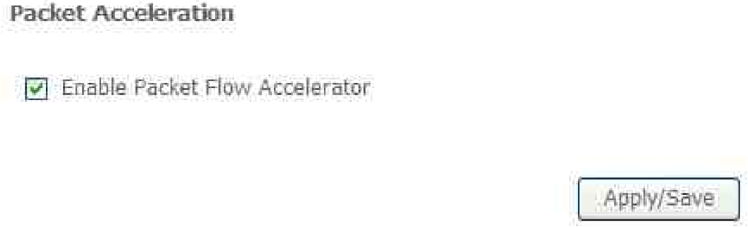
Figure 100 DNS proxy configuration

In this page, you can enable or disable the DNS proxy function.

After enabling the DNS proxy function, enter the host name of the broadband router and the domain name of the LAN network, and then click **Apply/Save** to save and apply the settings.

5.2.13 Packet Acceleration

Choose **Advanced Setup > Packet Acceleration** and the following page appears.



Packet Acceleration

☑ Enable Packet Flow Accelerator

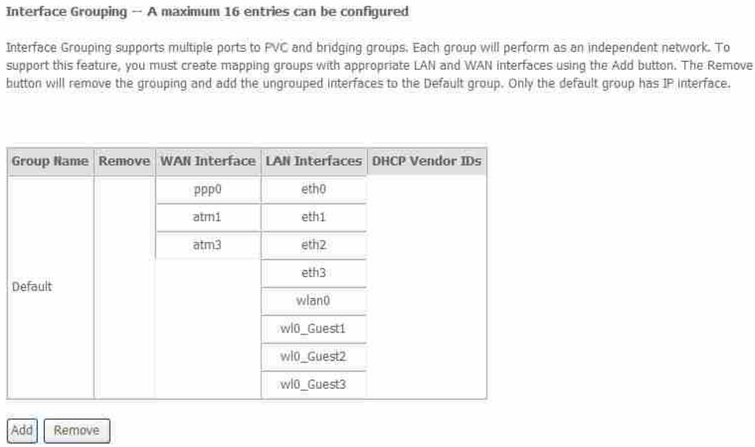
Figure 101 Packet Acceleration

In this page, you can enable or disable Packet Flow Accelerator.

After finishing setting, click **Apply/Save** to save and apply the settings.

5.2.14 Interface Grouping

Choose **Advanced Setup > Interface Grouping** and the following page appears.



Interface Grouping -- A maximum 16 entries can be configured

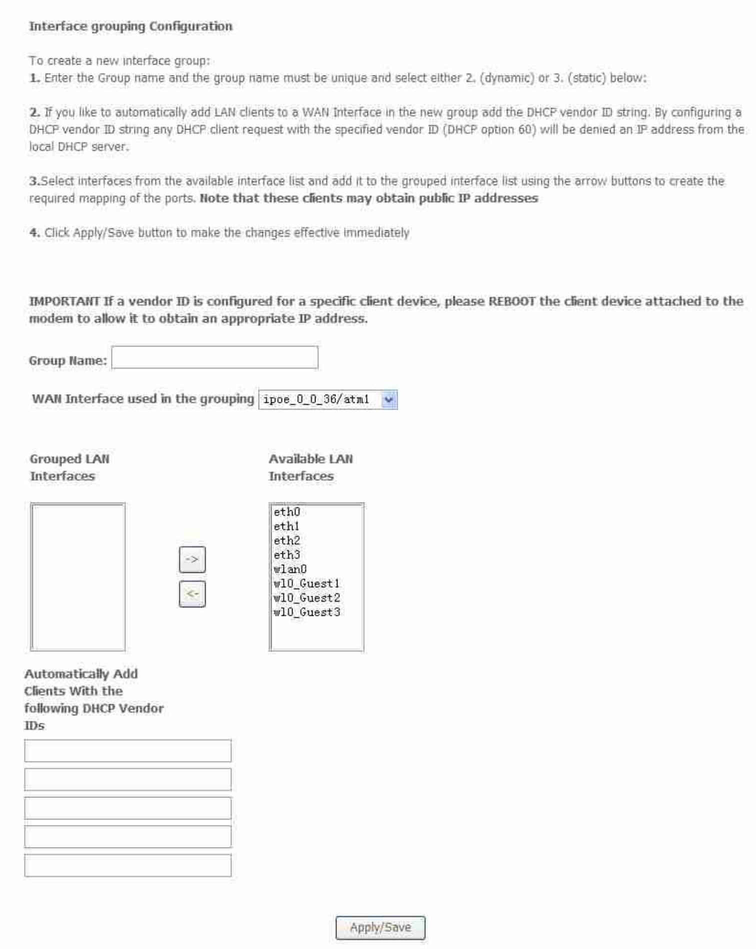
Interface Grouping supports multiple ports to PVC and bridging groups. Each group will perform as an independent network. To support this feature, you must create mapping groups with appropriate LAN and WAN interfaces using the Add button. The Remove button will remove the grouping and add the ungrouped interfaces to the Default group. Only the default group has IP interface.

Group Name	Remove	WAN Interface	LAN Interfaces	DHCP Vendor IDs
Default		ppp0	eth0	
		atm1	eth1	
		atm3	eth2	
			eth3	
			wlan0	
			wl0_Guest1	
			wl0_Guest2	
			wl0_Guest3	

Figure 102 Interface grouping configuration

Interface grouping supports multiple ports to PVC and bridging groups. Each group will perform as an independent network. To support this feature, you must create mapping groups with the appropriate LAN and WAN interfaces using the **Add** button. The **Remove** button will remove the grouping and add the ungrouped interfaces to the default group. Only the default group has IP interface.

Click the **Add** button to display the following page.



Interface grouping Configuration

To create a new interface group:
1. Enter the Group name and the group name must be unique and select either 2. (dynamic) or 3. (static) below:

2. If you like to automatically add LAN clients to a WAN Interface in the new group add the DHCP vendor ID string. By configuring a DHCP vendor ID string any DHCP client request with the specified vendor ID (DHCP option 60) will be denied an IP address from the local DHCP server.

3.Select interfaces from the available interface list and add it to the grouped interface list using the arrow buttons to create the required mapping of the ports. **Note that these clients may obtain public IP addresses**

4. Click Apply/Save button to make the changes effective immediately

IMPORTANT If a vendor ID is configured for a specific client device, please REBOOT the client device attached to the modem to allow it to obtain an appropriate IP address.

Group Name:

WAN Interface used in the grouping ipoe_0_0_36/atm1

Grouped LAN Interfaces

Available LAN Interfaces

eth0
eth1
eth2
eth3
wlan0
wl0_Guest1
wl0_Guest2
wl0_Guest3

Automatically Add Clients With the following DHCP Vendor IDs

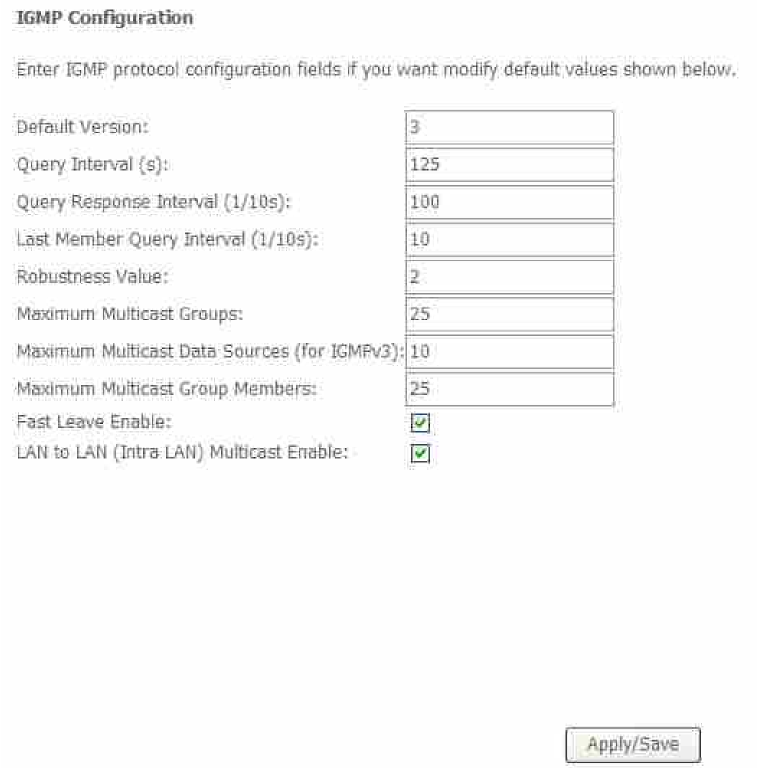
Figure 103 Adding a new interface group

In this page, please follow the on-screen configuration steps to configure the parameters of the interface grouping.

After finishing setting, click **Apply/Save** to save and apply the settings.

5.2.15 Multicast

Choose **Advanced Setup > Multicast** and the following page appears.



IGMP Configuration

Enter IGMP protocol configuration fields if you want modify default values shown below.

Default Version:	3
Query Interval (s):	125
Query Response Interval (1/10s):	100
Last Member Query Interval (1/10s):	10
Robustness Value:	2
Maximum Multicast Groups:	25
Maximum Multicast Data Sources (for IGMPv3):	10
Maximum Multicast Group Members:	25
Fast Leave Enable:	☑
LAN to LAN (Intra LAN) Multicast Enable:	☑

Figure 104 Multicast configuration

In this page, you can configure the multicast parameters of the IPv4.

After finishing setting, click **Apply/Save** to save and apply the settings.

5.3 Wireless

Choose **Wireless** and the submenus of **Wireless** are shown as below:

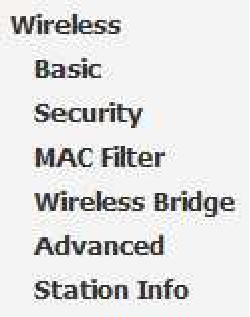
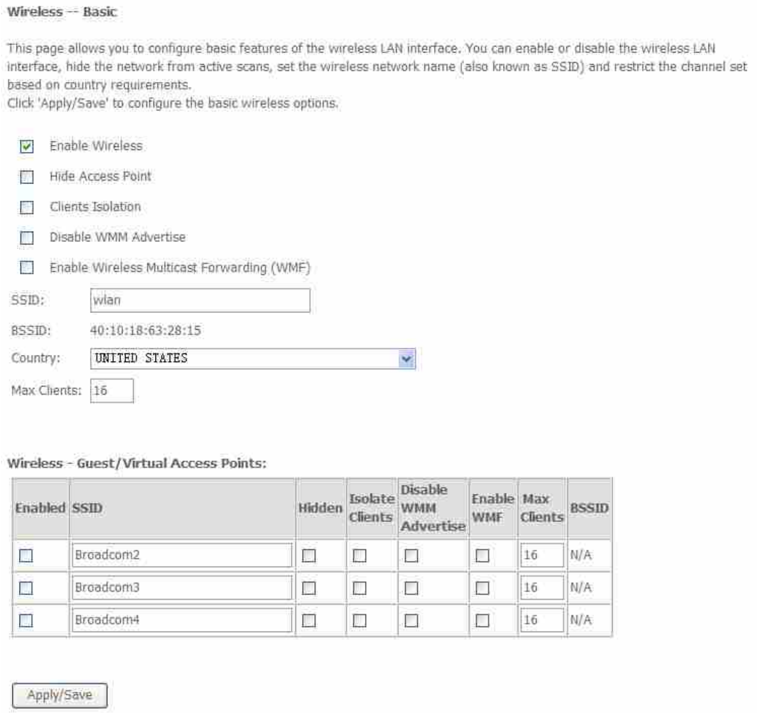


Figure 105 Submenus of wireless settings

5.3.1 Basic Settings

Choose **Wireless** > **Basic** to display the following page.



Wireless -- Basic

This page allows you to configure basic features of the wireless LAN interface. You can enable or disable the wireless LAN interface, hide the network from active scans, set the wireless network name (also known as SSID) and restrict the channel set based on country requirements.
Click 'Apply/Save' to configure the basic wireless options.

☑ Enable Wireless

□ Hide Access Point

□ Clients Isolation

□ Disable WMM Advertise

□ Enable Wireless Multicast Forwarding (WMF)

SSID:	wlan
BSSID:	40:10:18:63:28:15
Country:	UNITED STATES
Max Clients:	16

Wireless - Guest/Virtual Access Points:

Enabled	SSID	Hidden	Isolate Clients	Disable WMM Advertise	Enable WMF	Max Clients	BSSID
□	Broadcom2	□	□	□	□	16	N/A
□	Broadcom3	□	□	□	□	16	N/A
□	Broadcom4	□	□	□	□	16	N/A

Figure 106 Wireless basic configuration

This page allows you to configure the basic features of the wireless LAN interface.

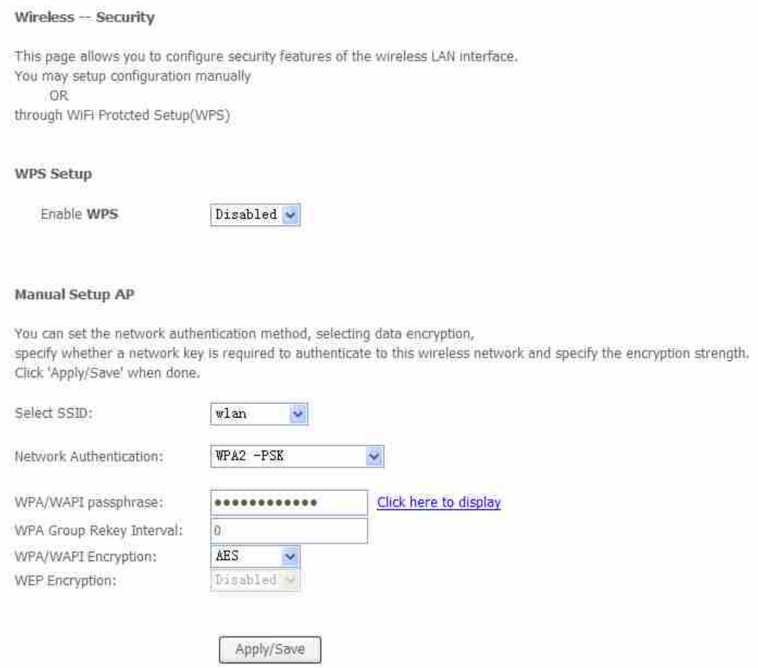
- **Enable Wireless:** Enable or disable the wireless function.
- **Hide Access Point:** if you want to hide any access point for your router, select this option, and then a station cannot obtain the SSID through the passive scanning.
- **Clients Isolation:** When many clients connect to the same access point, they can access each other. If you want to disable the access between clients that connect to the same access point, you can select this optior

- **Disable WMM Advertise:** After enabling this option, the transmission performance multimedia of the voice and video data can be improved.
- **Enable Wireless Multicast Forwarding (WMF):** After enabling this option, the transmission quality of video service such as IPTV can be improved.
- **SSID**: For the security reason, you should change the default SSID to a unique name.
- **BSSID:** Display the MAC address of the wireless interface.
- **Country**: The name of the country with which your gateway is configured. This parameter further specifies your wireless connection. For example, The channel will adjust according to nations to adapt to each nation's frequency provision.
- **Max Clients:** Specify the maximum wireless client stations to be enabled to link with AP. Once the clients exceed the max vlaue, all other clients are refused. The value of maximum clients is 16.
- **Wireless - Guest/Virtual Access Points:** If you want to make Guest/Virtual network function be available, you have to check those boxes in the table below. In the current software version, three virtual access points can be configured.

After finishing setting, click **Apply/Save** to save the basic wireless settings and make the settings take effect.

5.3.2 Security

Choose **Wireless** > **Security** to display the following page.



Wireless -- Security

This page allows you to configure security features of the wireless LAN interface.
You may setup configuration manually
OR
through WiFi Protcted Setup(WPS)

WPS Setup

Enable **WPS**: Disabled

Manual Setup AP

You can set the network authentication method, selecting data encryption,
specify whether a network key is required to authenticate to this wireless network and specify the encryption strength.
Click 'Apply/Save' when done.

Select SSID: wlan

Network Authentication: WPA2 -PSK

WPA/WAPI passphrase: ●●●●●●●●●●●●● Click here to display

WPA Group Rekey Interval: 0

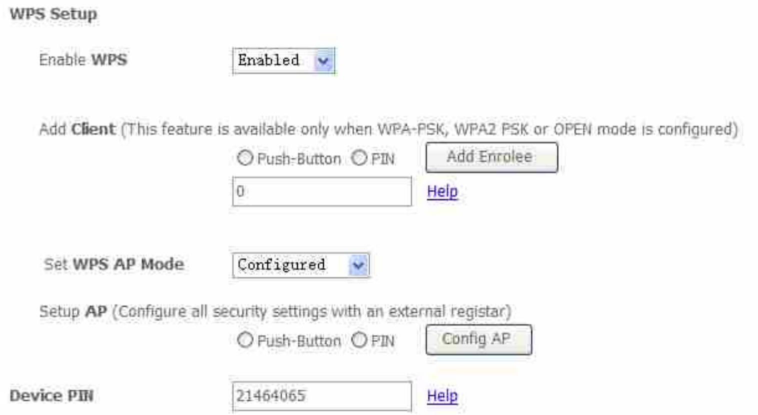
WPA/WAPI Encryption: AES

WEP Encryption: Disabled

Figure 107 Wireless security configuration

This page allows you to configure the security features of the wireless LAN interface. In this page, you can configure the network security settings by the Wi-Fi Protected Setup (WPS) method or setting the network authentication mode.

- **WPS Setup**



WPS Setup

Enable WPS: Enabled

Add Client (This feature is available only when WPA-PSK, WPA2 PSK or OPEN mode is configured)
○ Push-Button ○ PIN [Add Enrolee]
0 Help

Set WPS AP Mode: Configured

Setup AP (Configure all security settings with an external registar)
○ Push-Button ○ PIN [Config AP]

Device PIN: 21464065 Help

Figure 108 WPS setup

There are 2 primary methods used in the Wi-Fi Protected Setup:

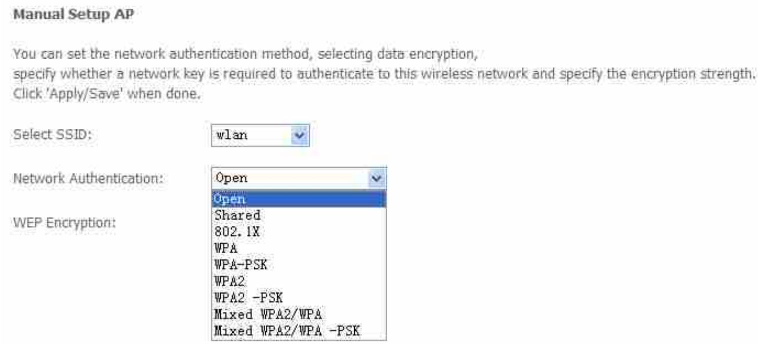
- PIN entry, a mandatory method of setup for all WPS certified devices.
- Push button configuration (PBC), an actual push button on the hardware or through a simulated push button in the software. (This is an optional method on wireless client).

If you are using the PIN method, you will need a Registrar (access point/wireless router) to initiate the registration between a new device and an active access point/wireless router. (**Note:** *The PBC method may also need a Registrar when used in a special case where the PIN is all zeros*)

In order to use the push-button for WPS authentication, you must ensure that the network card support the function. if it supports, you need not to do any configuration. You can press the WPS button directly to enable the WPS function.

- **Manual Setup AP**

This page provides 9 types of network authentication modes, including Open, Shared, 802.1X, WPA, WPA-PSK, WPA2, WPA2-PSK, Mixed WPA2/WPA, and Mixed WPA2/WPA-PSK.



Manual Setup AP

You can set the network authentication method, selecting data encryption,
specify whether a network key is required to authenticate to this wireless network and specify the encryption strength.
Click 'Apply/Save' when done.

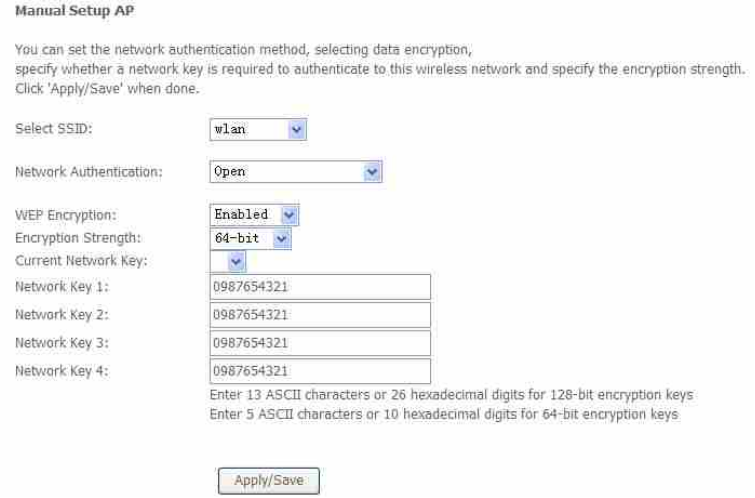
Select SSID: wlan

Network Authentication: Open

WEP Encryption:

Figure 109 Manual setup AP

- Open Mode



Manual Setup AP

You can set the network authentication method, selecting data encryption,
specify whether a network key is required to authenticate to this wireless network and specify the encryption strength.
Click 'Apply/Save' when done.

Select SSID: wlan

Network Authentication: Open

WEP Encryption: Enabled

Encryption Strength: 64-bit

Current Network Key:

Network Key 1: 0987654321

Network Key 2: 0987654321

Network Key 3: 0987654321

Network Key 4: 0987654321

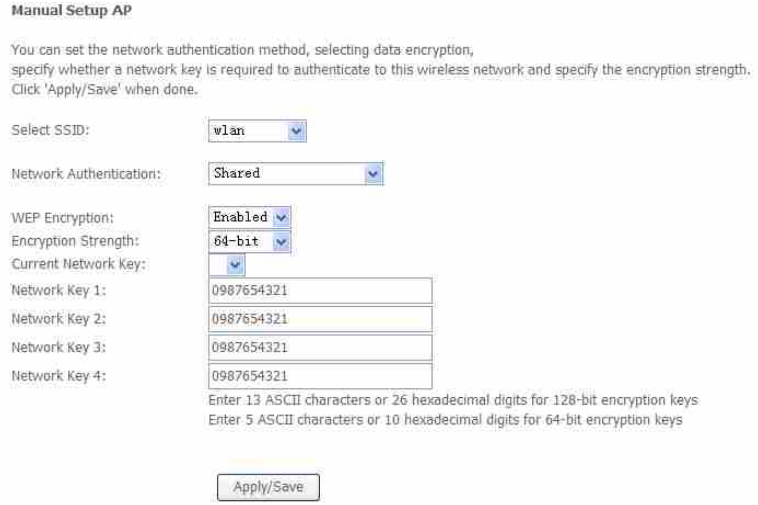
Enter 13 ASCII characters or 26 hexadecimal digits for 128-bit encryption keys
Enter 5 ASCII characters or 10 hexadecimal digits for 64-bit encryption keys

Figure 110 Open mode

- **Select SSID:** Select a SSID for configuring the security settings.

- **Network Authentication:** Select the Open mode.
- **WEP Encryption:** Enable or disable WEP encryption. After enabling this function, you can set the encryption strength, current network key, and network keys.
- **Encryption Strength:** You can set 64-bit or 128-bit key.
- **Current Network Key:** The current key that you use.
- **Network Key1/2/3/4:** Set the network key. If it is 128-bit key, you need to enter 13 ASCII characters or 26 hexadecimal digits. For the 64-bit key, you need to enter 5 ASCII characters or 10 hexadecimal digits.

- Shared Mode



Manual Setup AP

You can set the network authentication method, selecting data encryption, specify whether a network key is required to authenticate to this wireless network and specify the encryption strength. Click 'Apply/Save' when done.

Select SSID: wlan

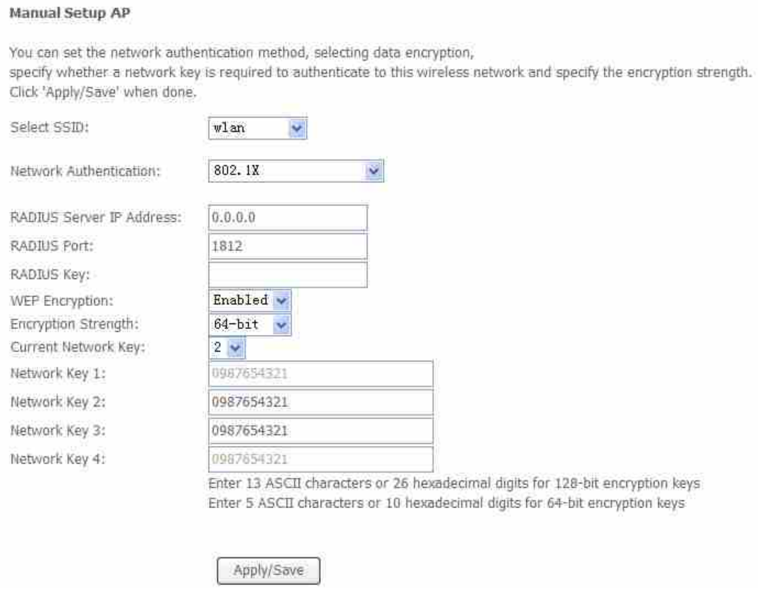
Network Authentication: Shared

WEP Encryption: Enabled
Encryption Strength: 64-bit
Current Network Key:
Network Key 1: 0987654321
Network Key 2: 0987654321
Network Key 3: 0987654321
Network Key 4: 0987654321
Enter 13 ASCII characters or 26 hexadecimal digits for 128-bit encryption keys
Enter 5 ASCII characters or 10 hexadecimal digits for 64-bit encryption keys

Figure 111 Shared mode

The parameters' description of shared mode, please refer to the **Open Mode**.

- 802.1x



Manual Setup AP

You can set the network authentication method, selecting data encryption,
specify whether a network key is required to authenticate to this wireless network and specify the encryption strength.
Click 'Apply/Save' when done.

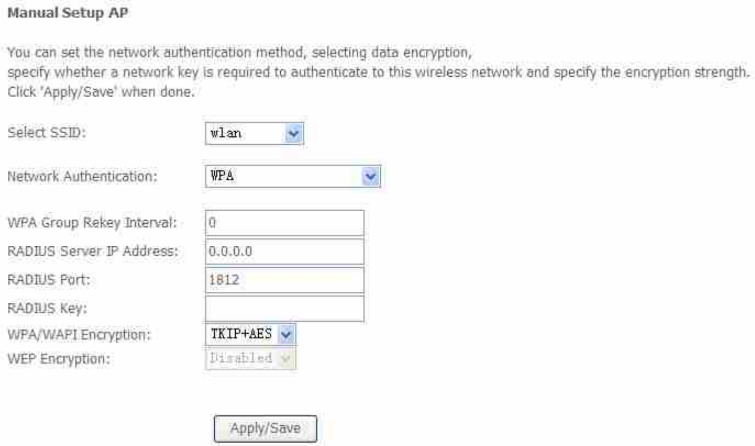
Select SSID:	wlan
Network Authentication:	802.1X
RADIUS Server IP Address:	0.0.0.0
RADIUS Port:	1812
RADIUS Key:	
WEP Encryption:	Enabled
Encryption Strength:	64-bit
Current Network Key:	2
Network Key 1:	0987654321
Network Key 2:	0987654321
Network Key 3:	0987654321
Network Key 4:	0987654321

Enter 13 ASCII characters or 26 hexadecimal digits for 128-bit encryption keys
Enter 5 ASCII characters or 10 hexadecimal digits for 64-bit encryption keys

Figure 112 802.1x mode

- **Select SSID:** Select a SSID for configuring the security settings.
- **Network Authentication:** Select the 802.1X in the drop-down list.
- **RADIUS Server IP Address:** Enter the IP address of the RADIUS server. RADIUS server is used to authenticate the hosts on the wireless network.
- **RADIUS Port:** The port number that the RADIUS server uses. The default port number is 1812. You may change it according to the server setting.
- **RADIUS Key:** Set the RADIUS key for accessing the RADIUS server.
- **WEP Encryption:** You can only select **Enabled**.
- **Encryption Strength:** You can set 64-bit or 128-bit key.
- **Current Network Key:** The current key that you use.
- **Network Key1/2/3/4:** Set the network key. If it is 128-bit key, you need to enter 13 ASCII characters or 26 hexadecimal digits. For the 64-bit key, y need to enter 5 ASCII characters or 10 hexadecimal digits.

- WPA Mode



Manual Setup AP

You can set the network authentication method, selecting data encryption,
specify whether a network key is required to authenticate to this wireless network and specify the encryption strength.
Click 'Apply/Save' when done.

Select SSID: wlan

Network Authentication: WPA

WPA Group Rekey Interval: 0

RADIUS Server IP Address: 0.0.0.0

RADIUS Port: 1812

RADIUS Key:

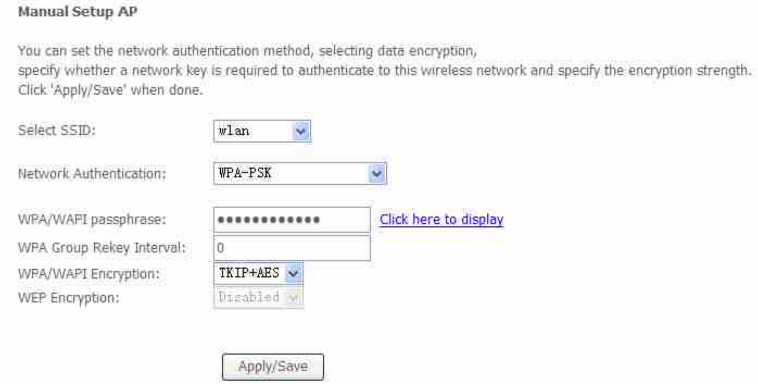
WPA/WAPI Encryption: TKIP+AES

WEP Encryption: Disabled

Figure 113 WPA mode

- **Select SSID:** Select a SSID for configuring the security settings.
- **Network Authentication:** Select the WPA-PSK mode.
- **WPA Group Rekey Interval:** Setting the interval for renewing key.
- **RADIUS Server IP Address:** Enter the IP address of the RADIUS server. RADIUS server is used to authenticate the hosts on the wireless network.
- **RADIUS Port:** The port number that the RADIUS server uses. The default port number is 1812. You may change it according to the server setting.
- **RADIUS Key:** Set the RADIUS key for accessing the RADIUS server.
- **WPA/WAPI Encryption:** You may select AES, or TKIP+AES.

- WPA-PSK Mode



Manual Setup AP

You can set the network authentication method, selecting data encryption, specify whether a network key is required to authenticate to this wireless network and specify the encryption strength. Click 'Apply/Save' when done.

Select SSID: wlan

Network Authentication: WPA-PSK

WPA/WAPI passphrase: ●●●●●●●●●●●●● Click here to display

WPA Group Rekey Interval: 0

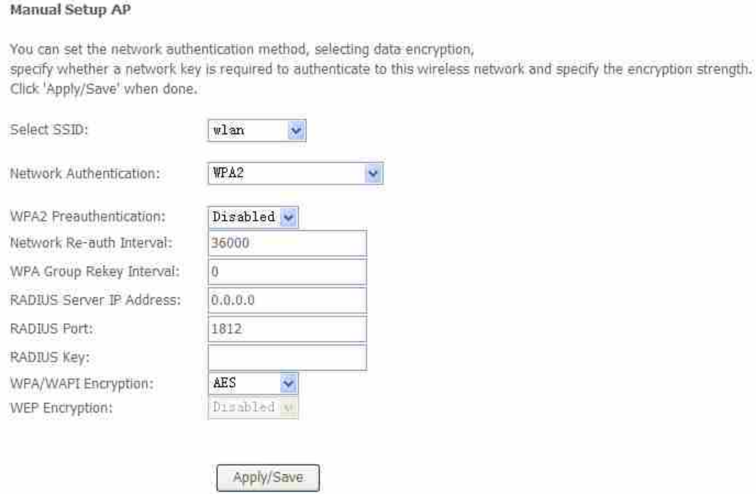
WPA/WAPI Encryption: TKIP+AES

WEP Encryption: Disabled

Figure 114 WPA-PSK mode

- **Select SSID:** Select a SSID for configuring the security settings.
- **Network Authentication:** Select the WPA-PSK mode.
- **WPA/WAPI passphrase:** The key for WPA encryption. Click the **Click here to display** button to display the current key. The default key is 87654321.
- **WPA Group Rekey Interval:** Setting the interval for renewing key.
- **WPA/WAPI Encryption:** You may select AES, or TKIP+AES.

- WPA2 Mode



Manual Setup AP

You can set the network authentication method, selecting data encryption,
specify whether a network key is required to authenticate to this wireless network and specify the encryption strength.
Click 'Apply/Save' when done.

Select SSID: wlan

Network Authentication: WPA2

WPA2 Preauthentication: Disabled

Network Re-auth Interval: 36000

WPA Group Rekey Interval: 0

RADIUS Server IP Address: 0.0.0.0

RADIUS Port: 1812

RADIUS Key:

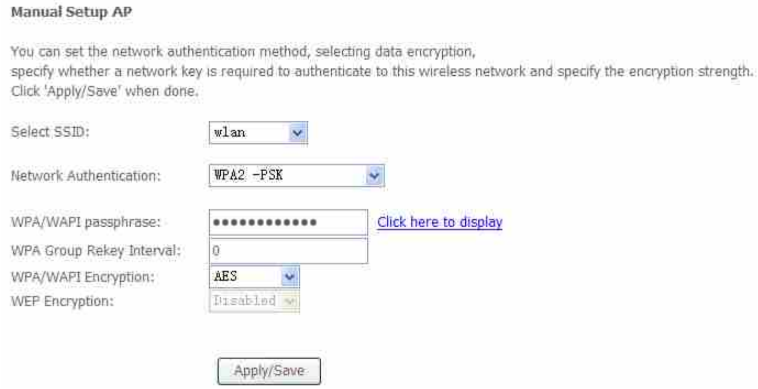
WPA/WAPI Encryption: AES

WEP Encryption: Disabled

Figure 115 WPA2 Mode

- **Select SSID:** Select a SSID for configuring the security settings.
- **Network Authentication:** Select the WPA2 mode.
- **WPA2 Preauthentication:** Enable or disable pre-authentication.
- **Network Re-auth Interval:** Set the network re-auth interval.
- **WPA Group Rekey Interval:** Setting the interval for renewing key.
- **RADIUS Server IP Address:** Enter the IP address of the RADIUS server. RADIUS server is used to authenticate the hosts on the wireless network.
- **RADIUS Port:** The port number that the RADIUS server uses. The default port number is 1812. You may change it according to the server setting.
- **RADIUS Key:** Set the RADIUS key for accessing the RADIUS server.
- **WPA/WAPI Encryption:** You may select AES, or TKIP+AES.

- WPA2-PSK



Manual Setup AP

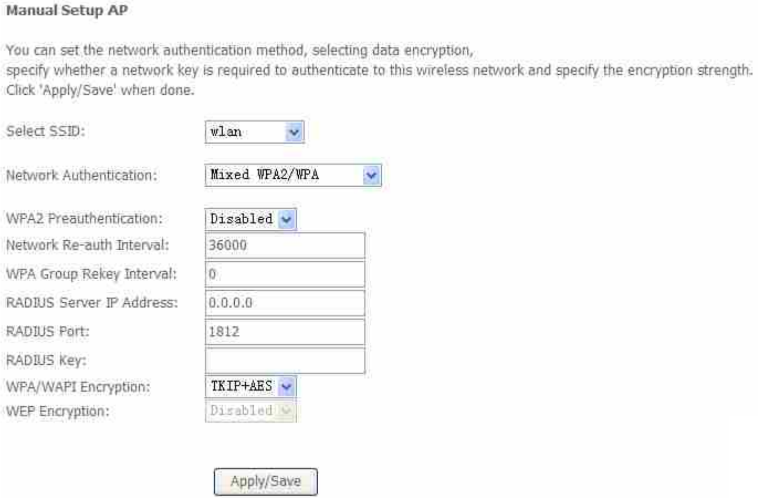
You can set the network authentication method, selecting data encryption,
specify whether a network key is required to authenticate to this wireless network and specify the encryption strength.
Click 'Apply/Save' when done.

Select SSID:	wlan
Network Authentication:	WPA2 -PSK
WPA/WAPI passphrase:	••••••••••••• Click here to display
WPA Group Rekey Interval:	0
WPA/WAPI Encryption:	AES
WEP Encryption:	Disabled

Figure 116 WPA2-PSK mode

The parameters' description of WPA2-PSK mode, please refer to the **WPA-PSK mode**.

- Mixed WPA2/WPA



Manual Setup AP

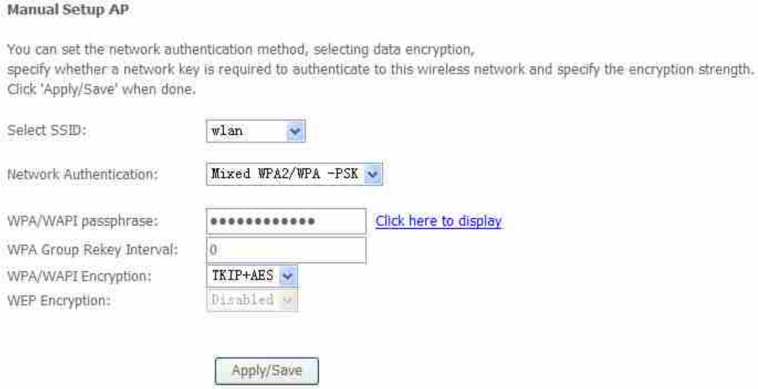
You can set the network authentication method, selecting data encryption,
specify whether a network key is required to authenticate to this wireless network and specify the encryption strength.
Click 'Apply/Save' when done.

Select SSID:	wlan
Network Authentication:	Mixed WPA2/WPA
WPA2 Preauthentication:	Disabled
Network Re-auth Interval:	36000
WPA Group Rekey Interval:	0
RADIUS Server IP Address:	0.0.0.0
RADIUS Port:	1812
RADIUS Key:	
WPA/WAPI Encryption:	TKIP+AES
WEP Encryption:	Disabled

Figure 117 Mixed WPA2/WPA

The parameters' description of Mixed WPA2/WPA mode, please refer to the **WPA2 mode**.

- Mixed WPA2/WPA-PSK



Manual Setup AP

You can set the network authentication method, selecting data encryption, specify whether a network key is required to authenticate to this wireless network and specify the encryption strength. Click 'Apply/Save' when done.

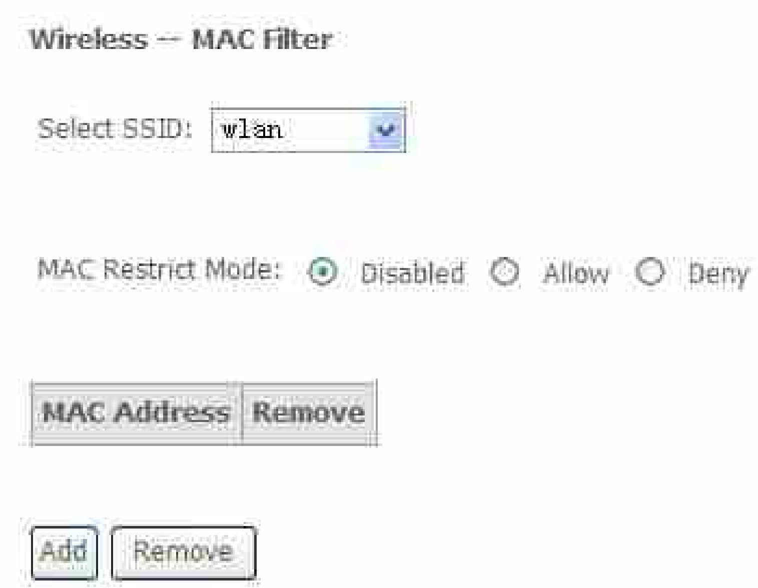
Select SSID:	wlan
Network Authentication:	Mixed WPA2/WPA -PSK
WPA/WAPI passphrase:	●●●●●●●●●●●●● Click here to display
WPA Group Rekey Interval:	0
WPA/WAPI Encryption:	TKIP+AES
WEP Encryption:	Disabled

Figure 118 Mixed WPA2/WPA-PSK mode

The parameters' description of Mixed WPA2/WPA-PSK mode, please refer to the **WPA-PSK mode**.

5.3.3 MAC Filter

Choose **Wireless > MAC Filter** to display the following page.



Wireless -- MAC Filter

Select SSID: wlan

MAC Restrict Mode: ● Disabled ○ Allow ○ Deny

MAC Address	Remove

Figure 119 MAC filter configuration

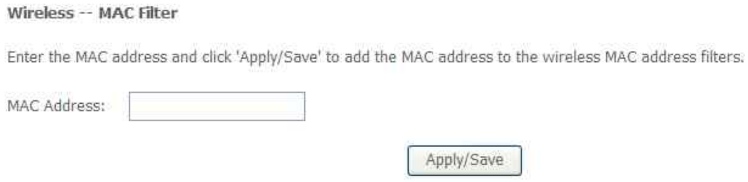
This page is used to allow or reject the wireless clients to access the wireless network of the wireless router.

In this page, you can add or remove the MAC filters.

The MAC restrict modes include **Disabled**, **Allow**, and **Deny**.

- **Disabled**: Disable the wireless MAC address filtering function.
- **Allow**: Allow the wireless clients with the MAC addresses in the **MAC Address** list to access the wireless network of the wireless router.
- **Deny**: Reject the wireless clients with the MAC addresses in the **MAC Address** list to access the wireless network of the wireless router.

Click the **Add** button to display the following page.



Wireless -- MAC Filter

Enter the MAC address and click 'Apply/Save' to add the MAC address to the wireless MAC address filters.

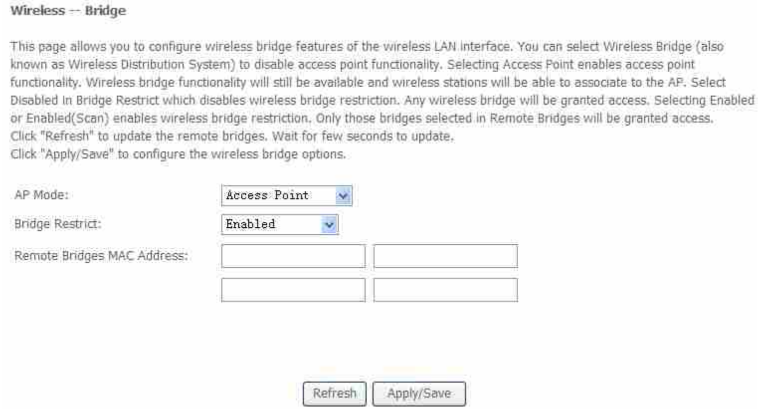
MAC Address:

Figure 120 Adding a MAC filter

In this page, enter the MAC address of the wireless client, and then click the **Apply/Save** button to add the MAC address to the MAC address list.

5.3.4 Wireless Bridge

Choose **Wireless > Wireless Bridge** to display the following page.



Wireless -- Bridge

This page allows you to configure wireless bridge features of the wireless LAN interface. You can select Wireless Bridge (also known as Wireless Distribution System) to disable access point functionality. Selecting Access Point enables access point functionality. Wireless bridge functionality will still be available and wireless stations will be able to associate to the AP. Select Disabled in Bridge Restrict which disables wireless bridge restriction. Any wireless bridge will be granted access. Selecting Enabled or Enabled(Scan) enables wireless bridge restriction. Only those bridges selected in Remote Bridges will be granted access.
Click "Refresh" to update the remote bridges. Wait for few seconds to update.
Click "Apply/Save" to configure the wireless bridge options.

AP Mode: Access Point

Bridge Restrict: Enabled

Remote Bridges MAC Address:

Figure 121 Wireless bridge configuration

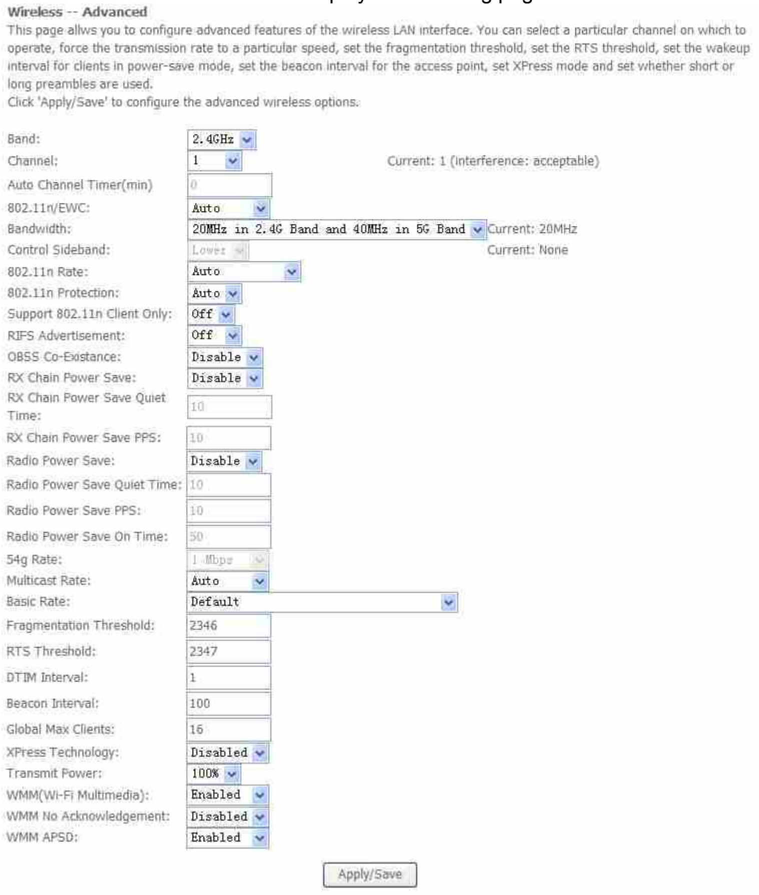
This page allows you to configure the wireless bridge features of the wireless LAN interface.

- **AP mode**: you may select Access Point or Wireless Bridge.
- **Bridge Restrict**: Enable or disable the bridge restrict function.
- **Remote Bridges MAC Address**: Enter the remote bridge MAC addres

After finishing setting, click the **Apply/Save** button to save and apply the setting

5.3.5 Advanced Settings

Choose **Wireless** > **Advanced** to display the following page.



Wireless -- Advanced

This page allws you to configure advanced features of the wireless LAN interface. You can select a particular channel on which to operate, force the transmission rate to a particular speed, set the fragmentation threshold, set the RTS threshold, set the wakeup interval for clients in power-save mode, set the beacon interval for the access point, set XPress mode and set whether short or long preambles are used.

Click 'Apply/Save' to configure the advanced wireless options.

Band:	2.4GHz	
Channel:	1	Current: 1 (interference: acceptable)
Auto Channel Timer(min)	0	
802.11n/EWC:	Auto	
Bandwidth:	20MHz in 2.4G Band and 40MHz in 5G Band	Current: 20MHz
Control Sideband:	Lower	Current: None
802.11n Rate:	Auto	
802.11n Protection:	Auto	
Support 802.11n Client Only:	Off	
RIFS Advertisement:	Off	
OBSS Co-Existance:	Disable	
RX Chain Power Save:	Disable	
RX Chain Power Save Quiet Time:	10	
RX Chain Power Save PPS:	10	
Radio Power Save:	Disable	
Radio Power Save Quiet Time:	10	
Radio Power Save PPS:	10	
Radio Power Save On Time:	50	
54g Rate:	1 Mbps	
Multicast Rate:	Auto	
Basic Rate:	Default	
Fragmentation Threshold:	2346	
RTS Threshold:	2347	
DTIM Interval:	1	
Beacon Interval:	100	
Global Max Clients:	16	
XPress Technology:	Disabled	
Transmit Power:	100%	
WMM(Wi-Fi Multimedia):	Enabled	
WMM No Acknowledgement:	Disabled	
WMM APSD:	Enabled	

Figure 122 Wireless advanced settings

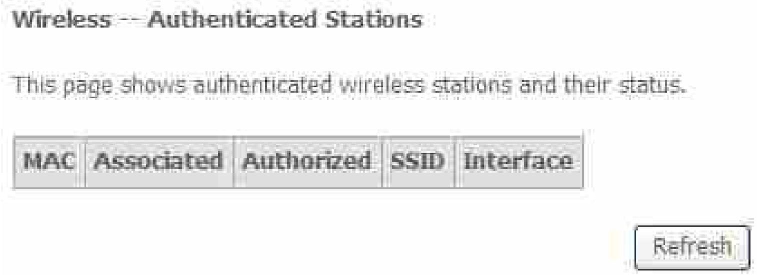
This page allows you to configure the advanced features of the wireless interface. Usually, you do not need to change the settings in this page.

Note:

The advanced wireless setting is only for the advanced user. For the common user, do not change any settings in this page.

5.3.6 Station Info

Choose **Wireless** > **Station Info** to display the following page.



Wireless -- Authenticated Stations

This page shows authenticated wireless stations and their status.

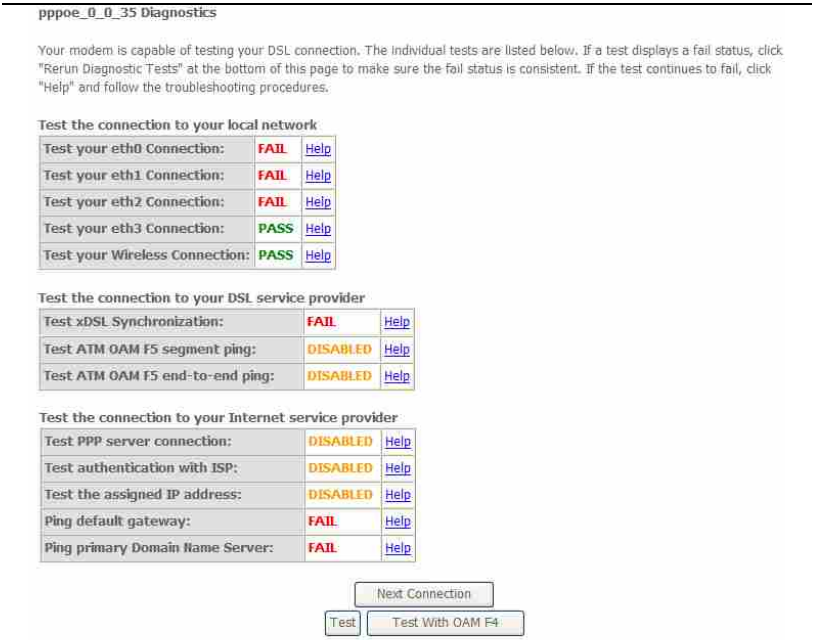
MAC	Associated	Authorized	SSID	Interface

Figure 123 Station information

This page shows the authenticated wireless stations and their status.

5.4 Diagnostics

Choose **Diagnostics**, and the following page appears.



pppoe_0_0_35 Diagnostics

Your modem is capable of testing your DSL connection. The individual tests are listed below. If a test displays a fail status, click "Rerun Diagnostic Tests" at the bottom of this page to make sure the fail status is consistent. If the test continues to fail, click "Help" and follow the troubleshooting procedures.

Test the connection to your local network

Test your eth0 Connection:	FAIL	Help
Test your eth1 Connection:	FAIL	Help
Test your eth2 Connection:	FAIL	Help
Test your eth3 Connection:	PASS	Help
Test your Wireless Connection:	PASS	Help

Test the connection to your DSL service provider

Test xDSL Synchronization:	FAIL	Help
Test ATM OAM F5 segment ping:	DISABLED	Help
Test ATM OAM F5 end-to-end ping:	DISABLED	Help

Test the connection to your Internet service provider

Test PPP server connection:	DISABLED	Help
Test authentication with ISP:	DISABLED	Help
Test the assigned IP address:	DISABLED	Help
Ping default gateway:	FAIL	Help
Ping primary Domain Name Server:	FAIL	Help

Figure 124 Diagnostics configuration

This page is used to test the connection to your local network, the connection to your DSL service provider, and the connection to your Internet service provider.

You may diagnose the connection by clicking the **Test** button or click the **Test With OAMF4** button.

5.5 Management

Choose **Management** and the submenus of **Management** are shown as below:

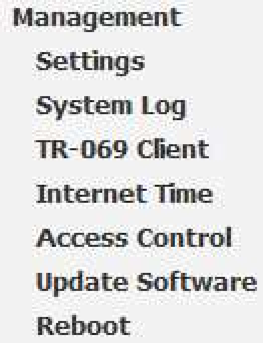
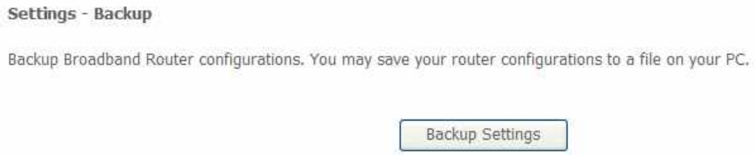


Figure 125 Submenus of management

5.5.1 Settings

Backup

Choose **Management > Settings > Backup** to display the following page.



Settings - Backup

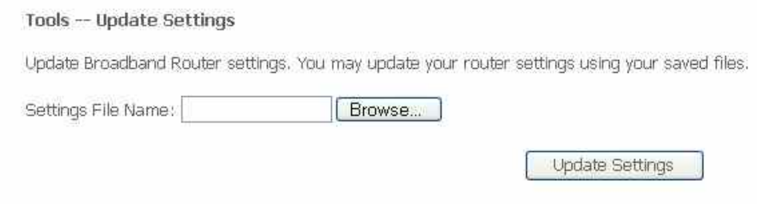
Backup Broadband Router configurations. You may save your router configurations to a file on your PC.

Figure 126 Backup settings

In this page, click the **Backup Settings** button to save your router’s settings to your local PC.

Update

Choose **Management > Settings > Update**, and the following page appears.



Tools -- Update Settings

Update Broadband Router settings. You may update your router settings using your saved files.

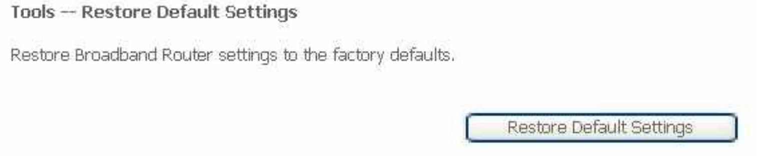
Settings File Name:

Figure 127 Update settings

In this page, click the **Browse…** button to select the correct new settings file, and then click the **Update Settings** button to update the router's settings.

Restore Default

Choose **Management > Settings > Restore Default** to display the following page.



Tools -- Restore Default Settings

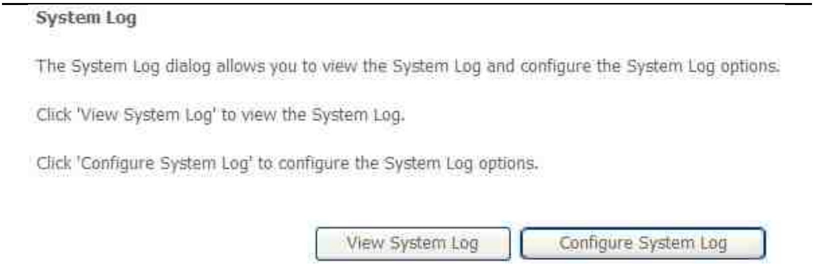
Restore Broadband Router settings to the factory defaults.

Figure 128 Restoring the default settings

In this page, click the **Restore default settings** button, and then system returns to the default settings.

5.5.2 System Log

Choose **Management > System Log** to display the following page.



System Log

The System Log dialog allows you to view the System Log and configure the System Log options.

Click 'View System Log' to view the System Log.

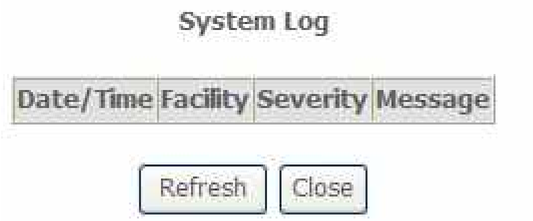
Click 'Configure System Log' to configure the System Log options.

Figure 129 System log

In this page, you are allowed to view the system log and configure the system log.

- **View System Log**

Click the **View System Log** button to display the following page.



System Log

Date/Time	Facility	Severity	Message

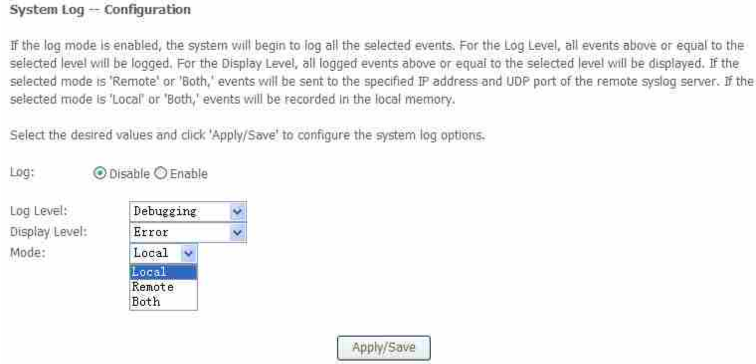
Figure 130 Viewing the system log

In this page, you can view the system log.

Click the **Refresh** button to refresh the system log. Click the **Close** button to exit.

- **Configuring the System Log**

Click the **Configure System Log** button to display the following page.



System Log -- Configuration

If the log mode is enabled, the system will begin to log all the selected events. For the Log Level, all events above or equal to the selected level will be logged. For the Display Level, all logged events above or equal to the selected level will be displayed. If the selected mode is 'Remote' or 'Both,' events will be sent to the specified IP address and UDP port of the remote syslog server. If the selected mode is 'Local' or 'Both,' events will be recorded in the local memory.

Select the desired values and click 'Apply/Save' to configure the system log options.

Log: ● Disable ○ Enable

Log Level: Debugging

Display Level: Error

Mode: Local

Figure 131 Configuring the system log

In this page, you can set 3 types of system log modes, including **Local**, **Remote**, and **Both**.

- **Local:** When selecting **Local**, the events are recorded in the local memory.
- **Remote:** When selecting **Remote**, the events are sent to the specified IP address and UDP port of the remote system log server.
- **Both:** When selecting **Both**, the events are recorded in the local memory or sent to the specified IP address and UDP port of the remote system log server.

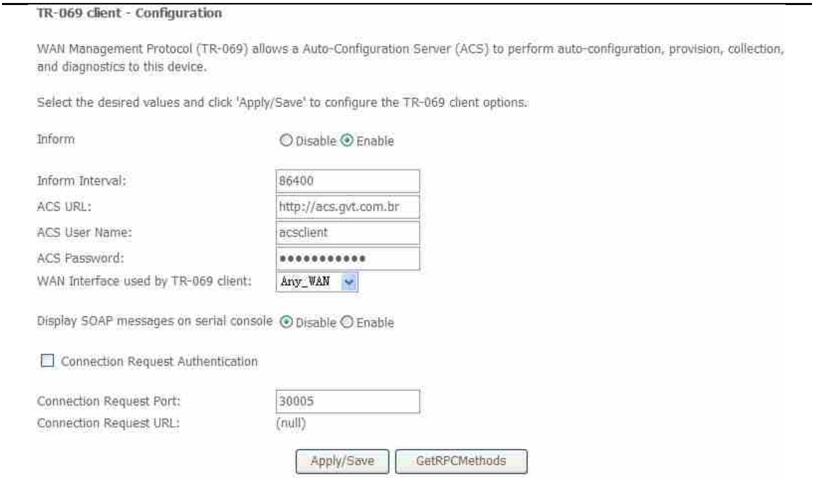
After finishing setting, click the **Apply/Save** button to save and apply the settings.

Note:

If you want to log all the events, you need to select the ***Debugging*** *log level.*

5.5.3 TR-69 Client

Choose **Management > TR-069Client** to display the following page.



TR-069 client - Configuration

WAN Management Protocol (TR-069) allows a Auto-Configuration Server (ACS) to perform auto-configuration, provision, collection, and diagnostics to this device.

Select the desired values and click 'Apply/Save' to configure the TR-069 client options.

Inform	○ Disable ● Enable
Inform Interval:	86400
ACS URL:	http://acs.gvt.com.br
ACS User Name:	acsclient
ACS Password:	●●●●●●●●●●●●
WAN Interface used by TR-069 client:	Any_WAN
Display SOAP messages on serial console	● Disable ○ Enable

□ Connection Request Authentication

Connection Request Port:	30005
Connection Request URL:	(null)

Figure 132 TR-069 client configuration

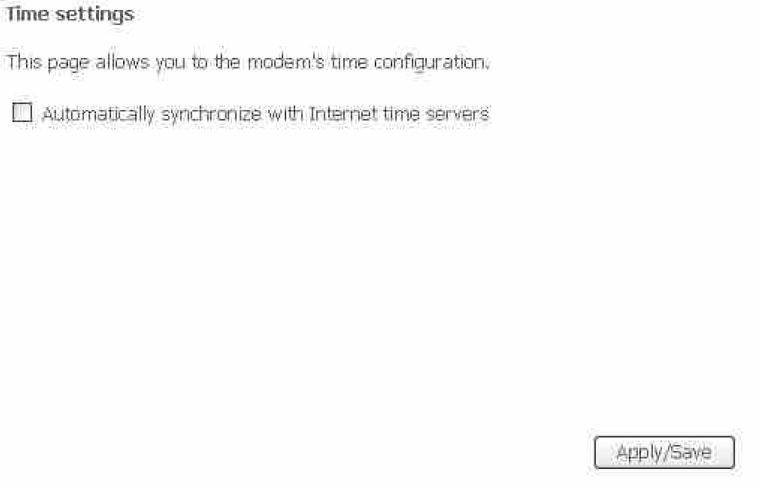
WAN Management Protocol (TR-069) allows a Auto-Configuration Server (ACS) to perform auto-configuration, provision, collection, and diagnostics to this device.

In this page, you may configure the parameters such as the ACS URL, ACS password, and connection request user name.

After finishing setting, click the **Apply/Save** button to save and apply the settings.

5.5.4 Internet Time

Choose **Management > Internet Time** to display the following page.



Time settings

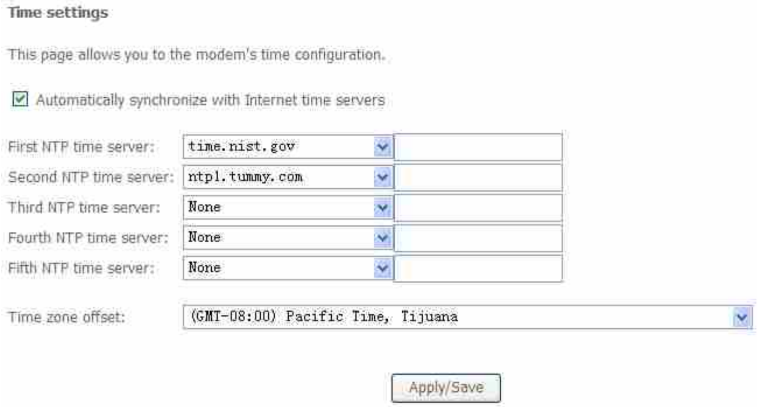
This page allows you to the modem's time configuration.

□ Automatically synchronize with Internet time servers

Figure 133 Time settings

In this page, you may configure the router to synchronize its time with the Internet time servers.

After enabling **Automatically synchronize with Internet time servers**, the following page appears.



Time settings

This page allows you to the modem's time configuration.

☑ Automatically synchronize with Internet time servers

First NTP time server:	time.nist.gov	
Second NTP time server:	ntp1.tummy.com	
Third NTP time server:	None	
Fourth NTP time server:	None	
Fifth NTP time server:	None	
Time zone offset:	(GMT-08:00) Pacific Time, Tijuana	

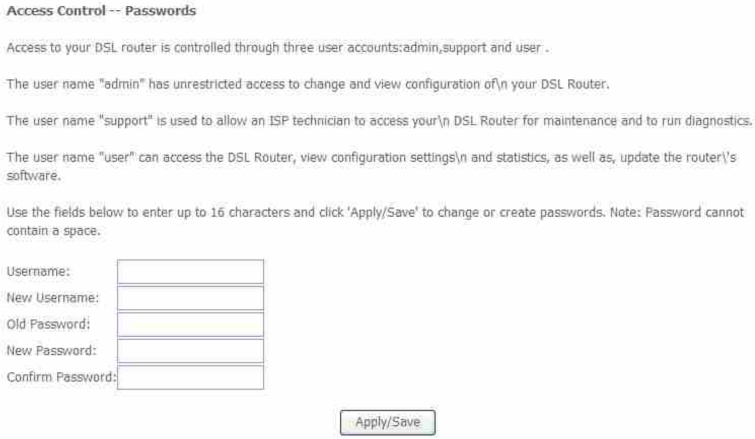
Figure 134 Setting the time server

In this page, set the proper time servers, and then click the **Apply/Save** button to save and apply the settings.

5.5.5 Access Control

Passwords

Choose **Management > Access Control > Passwords**, and the following page appears.



Access Control -- Passwords

Access to your DSL router is controlled through three user accounts:admin,support and user .

The user name "admin" has unrestricted access to change and view configuration of\n your DSL Router.

The user name "support" is used to allow an ISP technician to access your\n DSL Router for maintenance and to run diagnostics.

The user name "user" can access the DSL Router, view configuration settings\n and statistics, as well as, update the router\'s software.

Use the fields below to enter up to 16 characters and click 'Apply/Save' to change or create passwords. Note: Password cannot contain a space.

Username:	
New Username:	
Old Password:	
New Password:	
Confirm Password:	

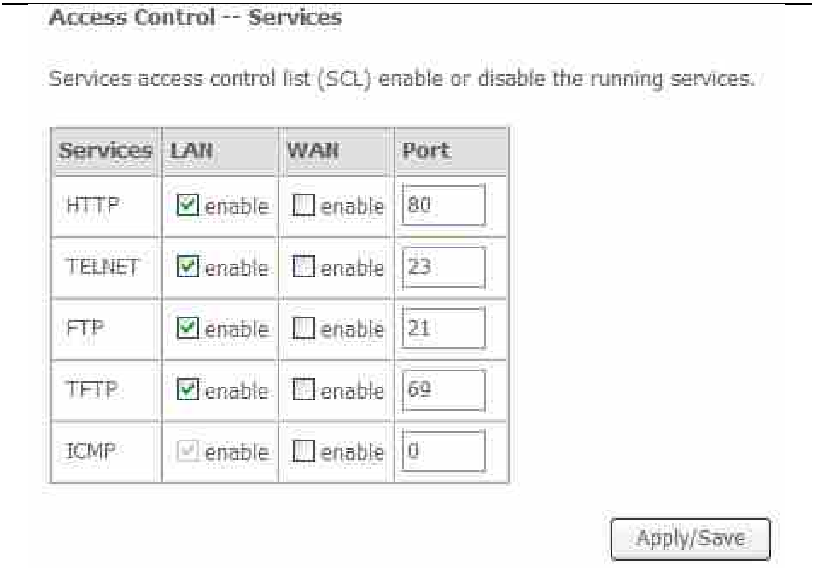
Figure 135 Modifying the password

In the page, you can modify the passwords of different users.

After finishing setting, click the **Apply/Save** button to save and apply the settings.

Services

Choose **Management > Access Control > Services Control** and the following page appears.



Access Control -- Services

Services access control list (SCL) enable or disable the running services.

Services	LAN	WAN	Port
HTTP	☑ enable	□ enable	80
TELNET	☑ enable	□ enable	23
FTP	☑ enable	□ enable	21
TFTP	☑ enable	□ enable	69
ICMP	☑ enable	□ enable	0

Figure 136 Services control

In this page, you can enable or disable the different types of services.

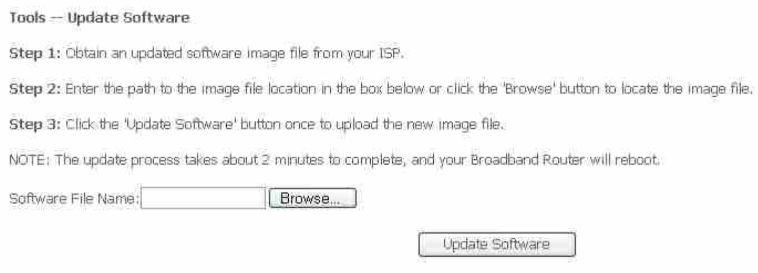
After finishing setting, click the **Apply/Save** button to save and apply the settings.

Note:

The WAN information is not displayed in the bridge mode.

5.5.6 Update Software

Choose **Management > Update Software**, and the following page appears.



Tools -- Update Software

Step 1: Obtain an updated software image file from your ISP.

Step 2: Enter the path to the image file location in the box below or click the 'Browse' button to locate the image file.

Step 3: Click the 'Update Software' button once to upload the new image file.

NOTE: The update process takes about 2 minutes to complete, and your Broadband Router will reboot.

Software File Name:

Figure 137 Updating software

If you want to upload the software, click the **Browse…** button to choose the new software, and then click the **Update Software** button.

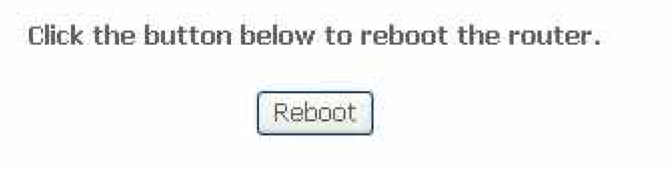
Note:

When software update is in progress, do not shut down the router. After software update completes, the router automatically reboots.

Please make sure that the new software for updating is correct, and do not use other software to update the router.

5.5.7 Reboot

Choose **Management > Reboot** and the following page appears.



Click the button below to reboot the router.

Figure 138 Rebooting the router

In this page, click the **Reboot** button, and then the router reboots.

6 Q&A

(1) **Q**: Why all the indicators are off?

A: Check the following:

- The connection between the power adaptor and the power socket.
- The status of the power switch.

(2) **Q**: Why the **LAN** indicator is off?

A: Check the following:

- The connection between the ADSL router and your computer, hub, or switch.
- The running status of your PC, hub, or switch.

(3) **Q**: Why the **DSL** indicator is off?

A: Check the connection between the "Line" port of router and the wall jack.

(4) **Q**: Why Internet access fails while the **DSL** indicator is on?

A: Check whether the VPI, VCI, user name, and password are correctly entered.

(5) **Q**: Why I fail to access the web configuration page of the DSL router?

A: Choose **Start** > **Run** from the desktop, and ping ***192.168.1.1*** (IP address of the DSL router). If the DSL router is not reachable, check the type of the network cable, the connection between the DSL router and the PC, and the TCP/IP configuration of the PC.

(6) **Q**: How to load the default settings after incorrect configuration?

A: To restore the factory default settings, turn on the device, and press the reset button for about 1 second, and then release it. The default IP address and the subnet mask of the DSL router are **192.168.1.1** and **255.255.255.0**, respectively.

- User/password of super user: **admin**/**admin**
- User/password of common user: **user**/**user**